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Original Contributions.

DRUGS AND THEIR COMBINATIONS.

BY J. P. BUCKLEY, D.D.S., CHICAGO. READ BEFORE THE NORTHERN INDIANA DENTAL SOCIETY, AT LOGANSPORT, SEPTEMBER 19-20, 1905.

One of the first things that I would present to you and one of the first things that you would like to find in the study of drugs is something that can be used for the obtunding of sensitive dentin; and, inasmuch as I can begin here and get at the removal of the pulp, and the drugs so applied, and take up the treatment of putrescent pulps on up to the treatment of pyorrhea alveolaris, etc., I shall begin with the treatment of sensitive dentin. We would all be pleased if we could find something here that would be so valuable in our practice that every patient would be willing that we should apply it. Unfortunately, some of the various formulæ that have been used for obtunding sensitive dentin are injurious, and when I say we would be glad to find a formula, I mean one that we can apply to the dentin that will not have a deleterious effect upon the pulp.

I believe that the best class of drugs that can be used in the treatment of sensitive dentin is the anodyne. A little preparation to which I want to call your attention is—

Px menthol,	gr. xx
Etheris,	f ℥ss
Chloroformi,	f ℥j

Sig:—Use as directed.

It is not a panacea for all ills. It will not completely desensitize all dentin, but it will give you aid in the painless preparation of sensitive cavities, especially where there is an extensive area involved. This preparation is menthol, ether and chloroform. The way to apply it is as follows: As soon as you get the rubber dam adjusted, take just a little pellet of cotton and dip it in the

mixture and place it in the cavity, and go on working at getting the instruments ready. By the time you are ready to commence preparing that cavity the two volatile liquids in this preparation will be volatilized by the normal heat of the tooth. This volatilizing action drives the menthol, which is an anodyne, into the dentin. You will remember that no solid can be changed into a liquid and no liquid can change into a gas unless it is done by a certain law of physics, that law by which heat is extracted from some source, in order to liquefy the one thing or volatilize the other. It is on this principle that this little remedy—menthol, ether and chloroform—acts.

One of the best things in connection with drugs that has been called to our attention within the last few years is the use of cocain under pressure for removal of the pulp. Before leaving the treatment of sensitive dentin I want to call your attention to the objections to using cocain pressure for the purpose of obtunding sensitive dentin. You know that you can completely obtund the dentin of the tooth and painlessly, absolutely painlessly, prepare the cavity by the use of local anesthetics; but these local anesthetics have to be used under pressure. Now, let us reason out what takes place. It is absolutely impossible to apply an equal amount of pressure over the entire surface of the dentin that is decayed. If you could force the solution into all the tubuli and obtund the fibrillæ without forcing it through at some point into the pulp, then you could use this method without danger of subsequent trouble. This, I hold, you cannot do. In order to excavate the entire dentin painlessly, you have to anesthetize at least the coronal portion of the pulp. It is difficult to do this without anesthetizing the entire organ.

I make this statement and stand by it, that I do not think we are ever justified in anesthetizing the pulp for the painless preparation of a sensitive cavity. My experience has caused me to make such a statement, because I have found that in a large majority of cases, where the pulp has been completely anesthetized, it caused subsequent trouble. Such trouble may come from two or three sources. There are ptomaines formed in the decomposition of all albuminous material, and in using this method you either force these poisonous substances into the pulp thus subsequently causing the trouble, or else it is caused by the cocain itself. Those who

are familiar with pharmacological research know that cocain is a protoplasmic poison, and if retained in that delicate and sensitive tissue may cause trouble. Cocain acts deleteriously upon all tissues. It is a mistaken idea to think that it only acts on the nerve tissue. The only reason afforded for thinking so is that the effect can be seen, as it were, on the nerve tissue, and not upon the other tissues of the pulp, from the fact that the nerve tissue is the medium of expression and sensation. While cocain cannot be used practically for obtunding sensitive dentin, it can be for the painless removal of the pulp tissue.

When I first began to remove pulps from the roots of teeth by means of pressure anesthesia, I had more pericemental trouble than when I used arsenic. That was a fact too conspicuous to be unobserved. I do not know whether that has been the experience of others or not. There must be a reason for this, and I have traced it to the same source as that which irritated the pulp when this method was used for obtunding the sensitive dentin. Too much pressure was used at first, and we were careless about sterilizing the cavity and about confining the solution under the pressure. These things we have to learn from sad experience. We know that the agent used is a protoplasmic poison, and we ought not, therefore, to force it any further than absolutely necessary for the painless removal of the pulp. We have learned to distinguish between the method of applying cocain by means of pressure for the removal of pulps from the teeth, and the method of applying arsenic.

That is one thing that you have to learn—how to completely sterilize a cavity. Then you must be careful not to force the anesthetizing solution any further than is absolutely necessary. There is a difference in the manner in which a cavity can be sterilized in the anesthetization and the devitalization of the pulp. In using arsenic we mechanically sterilize the dentin; that is to say, when the patient returns for the second sitting, with a round bur we mechanically excavate that portion of the dentin which is decayed and which is literally saturated with microorganisms and their poisonous ptomaines. To sterilize the cavity when using cocain with pressure chemical agents must be used. The dentin is sensitive, therefore cannot be mechanically sterilized, and if you fail to sterilize by other means you may force the microorganisms

and ptomaines through the end of the root and pericementitis follows.

Now, you may ask what drug can be used to thoroughly sterilize that dentin. Formerly, I used a 1-200 solution of sublamine, a substitute for bichlorid of mercury, and continued to do so until I had tests made and found that it was not so good a disinfectant as we had been led to believe. Recently I have been using Dr. M. L. Rhein's solution. This preparation, if you will apply it to the dentin, will afford a nearly chemical sterilization of that dentin; and it or some other good disinfectant should be applied before you use the local anesthetic. This solution is 1¾ grains of bichlorid of mercury dissolved in two ounces of peroxid of hydrogen, making approximately a 1-500 solution. Marchand's peroxid of hydrogen is what Dr. Rhein suggests using, because all peroxid of hydrogen will not make a clear solution.

I repeat that while I do not use pressure anesthesia for the purpose of painlessly excavating the cavity, I do use it for extirpating the pulp tissue. In certain cases, however, it is necessary to use arsenic. I believe arsenic has served us too well and too long to throw it aside.

A good formula is here given.

℞	Acidi arseniosi,	ʒj
	Cocainæ hydrochloratis,	gr. xx
	Menthol,	gr. v
	Lanolini,	qs. to make a stiff paste.

M. Sig: Use the desired quantity.

In this prescription you will find arsenious oxid as the base, and cocain hydrochlorate--a local anesthetic that is put in the prescription for the purpose of controlling the irritating action of the arsenic. Menthol is also added, and these three powders made into a paste by using lanolin. The action of the remedy will depend largely on the way it is put up. If the druggist understands his business he will know that menthol is a highly deliquescent substance, and since the water in the lanolin is sufficient to liquefy the menthol, it takes very little to make a nice paste out of arsenious acid and cocain hydrochlorate.

After you have removed the pulp by pressure anesthesia, or by the use of arsenic, it is necessary to fill the canal. In performing this operation a good many believe that guttapercha also has

served us too long and too well to be discarded. Those who think that there is virtue in guttapercha as a root filling, and who are in the habit of using eucalyptol can get better results by using this formula:

℞	Thymol,	gr. ij
	Menthol,	gr. iij
	Eucalyptol,	f ℥j

M. Sig: Use as directed.

Eucalyptol is used because it is a slight solvent for guttapercha. There is a difference between eucalyptol and oil of eucalyptus. If you use the latter you will have a beautiful case of pericementitis every time. Oil of eucalyptus contains three constituents, one of which is eucalyptol, which distills over first because it is the most volatile of the three. Eucalyptol, while it is not as irritating as the oil of eucalyptus, still is irritating. By adding thymol, which is a disinfectant, and menthol, a local anesthetic, you can modify the irritating properties of eucalyptol, as well as enhance its disinfectant power.

Sometimes in using the eucalyptol preparation, if you should use a little too much, or fail to use care and judgment, you may have a case of pericementitis to treat. In that case, instead of using equal parts of aconite, tincture of iodin and chloroform, you get excellent results by using this prescription:

℞	Tincturæ aconiti (rad),	f ℥j
	Chloroformi,	f ℥iv
	Menthol,	gr. xx

Now I come to the discussion of remedies to be used in the treatment of putrescent pulps and abscesses with some satisfaction. Until recently drugs have been selected and used in the treatment of these conditions absolutely empirically. There is a tendency in dentistry and medicine at the present time to apply therapeutics along rational lines. We are not satisfied to know that we get a certain result, or that by using certain drugs we produce a certain result. We are anxious to know why that result is produced. I believe that we have the treatment of putrescent pulps and blind abscesses put upon a rational basis. In order to have you understand this thoroughly I must digress just enough to call your attention, briefly, to the chemistry involved in the decomposition of pulp tissue. Pulp tissue is supposed to be composed of proteids,

carbohydrates and fats. There are some men in our profession who do not believe there is any fat in the original pulp tissue. I know men in Chicago who do not believe that there is any carbohydrate in pulp tissue. If we accept these opinions that there is no fat on the one hand and that there is no carbohydrate on the other, we must conclude then that pulp tissue is all proteid or albuminous material. Personally, I cannot accept these statements.

This is the point I want to make, that whether there are fats present in the original pulp tissue or not, in the treatment of putrescent pulps we have to take into consideration the presence of fatty compounds, because chemists have proved conclusively that in the decomposition of this albuminous material fat is one of the end products.

℞ Formalini,
Creasoti, aa f ℥j
Alcoholis, m xx
M. Sig: Use as indicated.

Excellent results can be obtained in treating putrescent pulps by using the first formula under this heading: Formalin and creasote, equal parts to which alcohol has been added. You will see in some journals the suggestion that equal parts of formalin and creasote can be used, but those who know anything about pharmacy, or have tried to mix them, will know that they will not make a clear solution; but add alcohol to the mixture and it will clear the solution.

Some journals have suggested the using of equal parts of formalin, creasote and alcohol. Alcohol is only added for the purpose of clearing the solution, and all that is necessary is to take enough alcohol to clear the solution. I find that for a drachm, approximately, of the formalin and creasote ten minims of alcohol is sufficient.

℞ Formalini,
Tricresol, aa f ℥j
M. Sig: Use as indicated.

The second formula for the treatment of putrescent pulps is formalin and tricresol. Tricresol you can get absolutely colorless, just as this sample is, but it is hard to obtain. Most of the specimens are colored. It is like carbolic acid, inasmuch as exposure to

the air and light for any length of time will cause it to become colored. Tricresol and formalin in equal parts will afford a better remedy for treating putrescent pulps than creasote and formalin, for three reasons: First, tricresol and formalin are miscible in all proportions. It will appear at first as though they are not going to mix, but by simply shaking the test tube a clear solution results. Without the addition of any alcohol, these two drugs will mix in all proportions. That is one reason why I prefer tricresol to creasote in the treatment of these cases. The second reason is that tricresol is a much better disinfectant than the creasote. It is three times as good a disinfectant as carbolic acid. In the past drugs have been selected and used in the treatment of putrescent pulps only because of their ability to inhibit the growth of micro-organisms, or to kill germs. There are many other things, such as irritating gases and poisonous ptomaines, that are formed in the root canal, and it is as necessary to dispose of these substances chemically as it is to kill the germs. This remedy will kill the germs and also dispose to advantage of the by-products of decomposition. The third reason, and the most important one for selecting tricresol instead of creasote, is because I believe this agent acts chemically upon the fats.

By selecting a remedy which can be hermetically sealed within the tooth, you are all the more happy for several reasons. Hermetically sealing a remedy keeps the saliva from contaminating the medicine and prevents the medicine from contaminating the saliva of the patient's mouth. We have still another advantage, as by so doing we prevent the tooth from changing color, provided, of course, we have the tooth to treat before it has become discolored. It is the formalin that gives us the advantage of hermetically sealing this remedy, because from this mixture is generated formaldehyd gas, and the two main gases that are formed from putrescent pulps are ammonia and hydrogen sulphid. If gas accumulates pressure would be produced and this would force some of the poisonous ptomaines through the apices of the roots. These ptomaines have been proved capable of setting up inflammation and suppuration. By using this remedy, which generates formaldehyd gas, we know why we can hermetically seal the cavity. The two gases, formaldehyd and ammonia, come in contact with each other, and there is formed protropin, which is used in medi-

cine to disinfect the urinary tract. We do not care so much about that as we do the fact that we can have this gas from our remedy come in contact with the gas within the tooth, and we can change it into a solid. Then the same gas, formaldehyd, will come in contact with one of the other gases, hydrogen sulphid, and it will convert it into wood alcohol and sulphur. If it is possible to convert the two main gases, NH_3 and H_2S, found in the putrescent canal into *solids and liquids,* the tooth can be hermetically sealed and the patient go home happy.

The tricresol acts to advantage upon the fats. It is my belief that lysol, or something resembling it, is produced by chemical action of tricresol upon the fatty compounds. This belief has been brought about because of the fact that lysol is practically a solution of cresols in fats. There are three cresols, ortho, meta and para, and a mixture of these three cresols is what is known as tricresol now recognized by the U. S. P. of 1900 as cresol. This is what I have used in combination with formalin to get this so-called rational treatment for putrescent pulps. The value of formaldehyd here depends upon the power the gas has of uniting chemically with mephitic gases. When these gases are not present to any extent formaldehyd is contraindicated in this strength solution. This remedy, I know, is being used everywhere, but it should not be. If the teeth have been treated, and the gases disposed of that come from a putrescent pulp, this remedy has no business there. In such cases tricresol should be used alone, or as an alternative, most anything after having disposed chemically of the gases. Dentists should not expect to find one drug or one remedy which can be used in every case all through their practice. This remedy has been used where it is contraindicated. Its use is indicated only where these gases are to be contended with.

℞ Formalini, f ℥j
Tricresol, f ℥ij

M. Sig: Use where indicated.

Where these gases are found only in small quantity the formula can be modified and would then be two parts tricresol and one part formalin.

In treating these acute abscesses sometimes it is necessary to

give potassium iodid. A good prescription for potassium iodid, wherever you want to use it, is given here, and was formulated with the idea of aborting an abscess.

℞ Potassii iodidi, ℥j ss
Syrupi sarsaparillæ comp, f ℥iij

M. Sig: Take a teaspoonful in water after meals.

If the patient failed to present for treatment until the putrescent material had been forced through the end of the root, open up into the pulp chamber, treat as usual, and then prescribe this alterative mixture of potassium iodid. The compound syrup of sarsaparilla is preferred to other vehicles for several reasons, one being that it is a pleasant syrup to take. The compound syrup of sarsaparilla contains extract of senna, which is laxative, extract of liquorice, a stomachic, and extract of sarsaparilla, a tonic; also the oils of anise, sassafras and wintergreen. In addition to having a tendency to mask the nauseating taste, it also has therapeutic properties, all of which would be useful in this particular instance. Instead of giving the medicine before meals, as is the general rule, this should be prescribed on a full stomach. Add a teaspoonful to half a wineglass of water and have the patient take it after meals. General directions would be to take a teaspoonful three times a day, but in cases of incipient abscesses the patient should take a teaspoonful every two hours until three doses have been taken, and then follow the directions written on the label.

℞ Liquoris magnesii citratis, f ℥ xij

Sig: Take one-half at once and the remainder in two hours, if necessary.

One of the things that should be avoided in treating these conditions is the accumulation of blood in the part. I call attention to this prescription for two reasons. It is an example of a saline cathartic, and saline cathartics are indicated especially where we are trying to abort the formation of an abscess. Then, besides being a saline cathartic, it is an example of an official preparation and illustrates how a prescription should be written for an official preparation. From experience behind the prescription counter, and my privilege of looking over the files of druggists and seeing the slipshod manner in which many prescriptions are written by dentists, it seems to me necessary to mention this. In writing a

prescription for Dover's Powder, for instance, another official preparation often used by dentists, all that would be necessary is:

℞ Pulveris opii et ipecacuanhæ.

Here is a useful prescription. Wherever there is an abraded surface it will stop pain like magic. It is unnecessary to write this prescription, for these two powders can be taken and mixed with oil, all three of them being insoluble in water. Wherever there is an exposed surface dry it, put on this oleaginous mixture, and then the water from the saliva will be thrown back, because water and oil are physically incompatible.

℞ Europhen,
Orthoform, aa ℥j
Petrolati liquidi, qs. to make thin paste
M. Sig: Apply to abraded surfaces.

℞ Cocainæ hydrochloratis, gr. vj
Acidi carbolici, m ij
Aquæ menthæ piperitæ, qs. ad. f ℥j
M. Sig: Use as a local anesthetic hypodermically.

This local anesthetic formula is a modification of other formulas now in use. The vehicle is peppermint water, because it contains enough menthol to mask the bitter taste of cocain. Most of the local anesthetics are bitter. Peppermint water is not strong enough, however, to keep the fungus growths from forming in this solution, so a disinfectant can be added, carbolic acid, for the purpose of keeping sterile the solution. I have prescribed only one ounce, and, if I have freshly prepared peppermint water with the acid used this solution will keep sterile for the length of time it takes to use one ounce of the fluid. The feature of this solution calling for special attention is that in nineteen minims there is contained one-quarter of a grain of the alkaloidal salt. We are justified in injecting into the system, at one time, one-quarter of a grain of cocain. It may not always be necessary to do this, but it will be in some instances. That does not mean that in this prescription only nineteen minims may be used, for some portion is always wasted in trying to get the air out of the syringe, and the tissues are apt to bleed. Perhaps fifty minims, or two syringefuls, might be used without even getting one-quarter of a grain into the system.

Should I be so unfortunate as to have a patient die from using cocain I would a thousand times prefer to have the prescription on

record in the drug store, thus making it possible to say that I used a syringeful of a certain anesthetic, the constituents of which I knew, as also the exact amount of cocain contained therein, than to say that I used Dr. Smith's Celebrated Local Anesthetic, the amount of cocain in which I did not know. Cocain is one of our most useful drugs. Use it we must; therefore, we want to know how to use it, and the exact amount we are using.

In using cocain solutions it is a wise precaution to keep antidotes at hand, the best one being strychnin. A 1-40 grain of this drug I have always close at hand. A homeopathic tablet of nux vomica is useful, for if the patient feels slightly faint, three, four or more of such tablets may be given. Nitroglycerin is used in about a 1 per cent solution. It has been known that by depositing a drop or two of the 1 per cent solution nitroglycerin under the tongue it gets into the circulation inside of five minutes, and that is as quick as you can get the strychnin into the syringe for injection into the arm. Nitroglycerin, notwithstanding the fact that it is used in a great many local anesthetic preparations, is not as good as strychnin, in my opinion.

Turning next to the sterilization of instruments by the use of drugs, the following will be found to answer the purpose admirably:

Formalin, to which has been added a 10 per cent solution of borax. Bichlorid of mercury will tarnish instruments, as also will formalin if used alone. The formula suggested, however, makes a solution in which instruments are readily disinfected without tarnishing.

WHY I USE PORCELAIN.

BY CRAIG M. WORK, D.D.S., OTTUMWA, IA. READ BEFORE THE NEBRASKA STATE DENTAL SOCIETY AT LINCOLN, MAY 16-18, 1905.

The progress which has been made by the members of the dental profession in behalf of humanity in the past few years is unprecedented, and no other branch of the profession which practices the healing art has made so great advancement as has that of dentistry.

This great advancement has been brought about by no one man nor set of men in particular, but it has been the improvement of one man's ideas by one after another, and so on until we all are

or should be responsible for some of the dignity which the dental profession now assumes.

While the incentive for improvement has been only the comfort of mankind, the lines on which it has been carried out have been many. For instance, in orthodontia, the methods of to-day would put to shame those used a few years ago, and the oral surgeon has improved the methods in his line until we are not able to circumscribe his powers. In the prosthetic branch the extent of improvement has been wonderful, but to my mind the greatest advancement has been made in the branch known as operative dentistry, or that branch which pertains to the saving of the natural teeth. In this branch the improvement in the methods and manner in which cavities are prepared for the reception of the different filling materials is only surpassed by the knowledge we have gained in the preparation and manipulation of the several materials we now use in this branch of our art; it is to one of these materials, porcelain, and its use that I wish to refer.

Porcelain is no new material in the hands of the dentist, for it has been used for years in the manufacture of artificial teeth, and it has been used for the filling of teeth for at least thirty years, and perhaps longer, but until lately for the latter purpose by a limited number of dentists only. However, of late years, many more of the members of the profession, seeing a great need for something better than the metals with which to save teeth, have taken up the study of porcelain and are now using it with great satisfaction to themselves and to those whom they serve.

The first porcelain fillings of which we have any account were ground from artificial teeth to fit the cavity and then anchored in position. Any space existing between such an inlay and the cavity walls was filled with gold foil, and while we can all recognize the great amount of skill required to enable one to make a good filling in this way, such fillings did good service and were a source of great pride to the gentlemen who made them.

Following this method, some members of the profession ground inlays from artificial teeth and blocks of porcelain to fit cavities previously prepared and cemented them to place, much in the same way as we cement inlays now, and while we can understand how crude these inlays must have been, yet the method was the best known at that time.

While, as before stated, porcelain has been used by some dentists, and successfully, for quite a number of years, it is only during those of recent date that this wonderful substance has become so popular as a material with which to restore the lost portions of natural teeth, and this popularity, I think, is greatly due to the results obtained by the pioneers in its use, and to the manufacturer in giving us the material in such convenient form for our use, as well as furnishing convenient apparatus with which to bake it. I am of the opinion that few of us who now make porcelain inlays would be as enthusiastic about the work if we had to pulverize old teeth to obtain the necessary material and then bake it in a coke furnace.

It is not our purpose to deal with the chemical composition and method of preparation of porcelain in this paper, but rather to speak of some of its physical properties, methods of manipulation and its advantages over the other filling materials now used.

The latter part of the above statement may lead some of you to think that I consider porcelain to be the only material the dentist needs in his efforts to save teeth, which would be an entirely incorrect opinion, for I believe there are many places where almost any other material would serve better than would porcelain, but I also believe that those places become fewer as we acquire more skill in its use, just as the need for amalgam diminishes as the operator acquires skill in the manipulation of gold.

On account of the brittleness of porcelain I would not advise its use in molar teeth when the margins of the cavity are exposed to the stress of mastication, nor its use in bicuspids under similar conditions, but if I wanted to use this material in a bicuspid or molar I would so prepare the cavity that the margin of the inlay would be carried beyond the area of liability, for in most of the cases presented to you for restoration the tooth is decayed to such an extent that you find it necessary to protect the frail walls by grinding away the cusps and replacing them with the filling, and especially is this true of the bicuspid teeth. However dangerous this practice may seem, some of the most satisfactory inlays made are in bicuspid teeth, where, after from one to four years of service, the margins are still perfect and the tooth apparently in as good a state of preservation as when the restoration was made.

For cavities in the six anterior teeth we find porcelain more

strongly indicated than for those in the posterior teeth, and, while it is not necessary, if we care anything for the esthetic effect of our operation, we are forced to use porcelain, consequently our attention is more strongly centered in these teeth.

Of the cavities presenting themselves in the six anterior teeth, those known as labial cavities demand the use of porcelain more than any other. Next in importance comes the simple proximal cavity. Although we see the need, from an esthetic point of view, for filling the proximal cavities which involve the incisal with porcelain, we have to consider the amount of stress to be brought to bear and the direction in which it will be applied before we can safely decide what material may be used for such restoration.

The first mentioned class of cavities are the most difficult to contend with on account of their extreme sensitiveness, and the difficulty we encounter in obtaining a true fitting matrix is only surpassed by that experienced in getting the inlay shaded so that when it is set the light will not be reflected by the cement.

Those of the second class or the simple proximals are not so difficult to restore, provided plenty of space is obtained and the cavity prepared in a manner that will permit the matrix being drawn in one direction. It is not so difficult to burnish a matrix for this kind of cavity, neither does the light problem enter so strongly into its final effect.

The third class, those including the incisal, are more easily prepared and less separation is necessary as the walls of the cavity may be made parallel with the long axis of the tooth and the matrix removed with less liability of distortion than in any other.

In preparing any cavity for an inlay the thing of most importance is the seating of the cavity, and this must be flat; the walls must be flat and as nearly right angles to the seat as is possible for them to be made. Flat floors should be obtained to assume the strain when stress is applied and the margins square and never beveled, as they are for gold fillings. Care should be taken that there are no undercuts to distort the matrix in its removal, and only in this respect does the preparation of a cavity for an inlay and one for a gold filling differ greatly, therefore, any idea for retention must be carried out with these facts in view.

In making a matrix, the kind of foil to be used depends on the kind of porcelain of which the inlay is to be made. If low-fusing

body is chosen the matrix may be of gold, but if high-fusing body is to be used we must of necessity take platinum foil for the matrix, but there is little difference in the manipulation of these metals and the methods used for one may be used for the other.

For the matrix, choose a piece of metal large enough to go considerably beyond the margins of the cavity and begin the forming by working the metal against the deepest portion of the cavity, and from this point work it against the cavity walls from the center to the margins; after this is done, bend the overlapping portions down on the tooth and burnish the margins and the overplus against the tooth with cotton pellets packed tightly into the cavity and with others held in the pliers. The matrix having thus been rudely formed is taken out and trimmed to suit the case, after which it is placed in the cavity again and burnished with cotton pellets as before, this procedure being followed with the metal burnisher, care being taken to work out all angles and retention grooves before attending to the margins. Finish the burnishing by holding cotton tape tightly over the margins of the matrix and burnishing on this until all parts of the matrix fit against the tooth exactly.

The metal should never be annealed and the matrix never introduced into the cavity after the final burnishing, it being too easy a matter to distort the matrix in so doing. The next step is choosing the colors to be used in the inlay, and this can only be done successfully after long experience. I know of no way to advise or give you any light on this subject other than to quote Dr. Reeve's injunction "look for underlying colors."

After the colors are chosen, the building and baking absorbs the attention, and this is the important part of the process, for no matter how well you have prepared the cavity and formed the matrix, no matter how accurately the colors have been selected, you will, if proper precaution be not taken, distort the matrix and reap failure as the result. It must always be kept in mind that, in fusing, porcelain attempts to assume a globular form, and to prevent this action from pulling the matrix it is necessary to bake only a small portion at first, care being exercised to see that the first baking is carried to a full glaze. If this is done the subsequent bakings are not liable to draw the metal.

The proper point to which to carry the fusing is another thing which you will have to learn by experience, but I prefer to have

porcelain a little overfused rather than underfused, for in the latter case it is liable to be porous and as a result change color.

And now since it may seem that the subject, "Why I Use Porcelain," has been ignored altogether in this paper I will briefly summarize my reasons.

My main reason for the use of porcelain is the esthetic effect in the patient's mouth. How many beautiful faces become vulgar and repulsive when a smile permits the display of large gold fillings or a gold crown or a wide gold band over a Richmond crown, and perhaps all of these. Another reason for using porcelain is the extreme kindliness with which gum tissue takes to porcelain, and to prove this you have but to examine the gums about labial cavities which have been filled with gold and those which have been filled with porcelain.

Still another reason for my using this material is the comfort the patient experiences as compared with the use and insertion of gold, no malleting, no long sitting with rubberdam on and mouth in an uncomfortable condition.

The above reasons for the use of porcelain would seem to be sufficient, but there is still another one, and that is the advantage an inlay, gold or porcelain, has over a built up filling, or one made in the mouth, this consisting in the lessened liability of leakage at the margins and a consequent failure of the operation.

In closing my remarks, I admonish you who have not tried this method of saving teeth to take up the work as soon as you go home and give your patients the service they demand and deserve. In so doing you will find that you have yet to learn the most fascinating as well as the most gratifying method of saving some of the natural teeth, and one which will remunerate you in a financial way if you learn to do it well.

THE FRATERNAL SPIRIT IN DENTISTRY.

BY H. C. KAHLO, D.D.S., INDIANAPOLIS, IND. READ BEFORE THE NORTHERN INDIANA DENTAL SOCIETY AT LOGANSPORT, SEPTEMBER 19-20, 1905.

The fraternal spirit in dentistry is entirely too sporadic. A few men have found it and we can pick them out in every association meeting; first, because of their faithfulness in attendance, and,

second, because of their enthusiasm. The very best men in every society—and by best I mean the men who are doing the most toward the advancement of the science of dentistry—are the men who are imbued with fraternal spirit. If this is a fact, and I firmly believe it to be, we must acknowledge that fraternism is a valuable asset in the progress of our profession.

In this strenuous age of business activity men are too prone to give themselves over to the grind of practice, and to confine themselves to their offices. As a consequence when recreation becomes a necessity they naturally choose an atmosphere remote from dentistry. Such men are often good, conscientious workers and accomplish much for their patients, but what do they give to their professional confreres? They peruse their dental periodicals faithfully and adopt all the new and up-to-date methods which are brought out by the thinkers and workers in dentistry; but they give nothing in return.

Why is it we do not see them at dental meetings? Principally because of the absence of fraternism. They will tell you that there is nothing in attending association meetings, since they find all the matter in dental journals. I grant that, under prevailing conditions, most of it may be found in dental journals, but the most interesting part, that which grows out of fraternism, does not appear in the journals.

I have long since given up the idea of attending dental conventions principally to hear papers read and to take part in their discussion. I come to these meetings for social benefit and recreation mainly, and what I get out of them in the way of knowledge is obtained mostly through the social side, from heart-to-heart talks, as it were, with my professional friends and comrades.

The papers and discussions are of secondary importance to me, for I, too, study them from the printed proceedings.

Clinics are always interesting and instructive and should be a conspicuous feature of every dental meeting; but, as for papers and their discussion, I look forward to the eventual adoption of the system which prevails in several of the smaller national societies in medicine, and which is as follows:

Programs are arranged and essayists and their subjects announced therein, just as ours; instead, however, of reading the papers in the order indicated, each essayist comes forward with his

manuscripts, merely announces the title and turns it over to the society's secretary for publication in the proceedings. He then gives an informal talk along the lines upon which he has written and then the discussion follows. This form of procedure has a decided tendency to promote the informality of the occasion, and, incidentally, the fraternal spirit also. It also eliminates much of the tediousness and monotony of the present way of conducting our business sessions.

Viewing the subject from another point, we have a code of ethics to which we are attracted to a greater or less extent. This code is the moral law of practice to which we are bound in the same sense as we are bound to all the common civil laws. We may not have studied our code of ethics, but we intuitively know its limitations by our ability to discriminate between right and wrong as in our attitude toward the civil laws.

What is the object of a code of ethics in dentistry? I take it that it is centered around the principle of the golden rule, since all who follow the teachings of the latter need to know very little about an ethical code. This same golden rule is the basic principle of fraternism. It follows, that, in direct proportion to the increased amount of the spirit of fraternity, we will have decreased need for the code of ethics. Therefore, instead of spending our time perfecting this code, we could use it more advantageously developing fraternism. It seems to me that the only practical aim in the perfected code lies in its relationship to commercialism, and, if this is true, an adequate amount of fraternal spirit will eliminate any existing professional tie between you and the commercial practitioner.

A word along the line of our attitude toward the advertising dentist. One of our difficulties has always seemed to me to arise from a feeling that we should tie him up in some way that will make it hard for him to succeed. To me it seems that this spirit arises from a fear that he is getting something that we want and ought to have. We cannot seem to shake off an ambition to compete against him. Now, in the first place, he is not getting much that we want, and he is getting a great deal which we should be glad to have him have. Besides, we can hardly compete against him so long as he has the advantage which his typographical megaphone gives him to attract attention. Let him go. We do not

want him, and maybe he is doing a minor service to humanity. However, he certainly is a menace to the fraternal spirit in dentistry, and I believe a greater menace, all things considered, than he is to humanity at large. Therefore, the sooner we learn to ignore him entirely the quicker we shall acquire a consistent amount of real professional dignity.

Another phase of commercialism is that which applies to a comparison of our fees. Sometimes we criticize a neighbor because we learn that he has done a piece of work for a smaller fee than we would have attached to the same amount of labor. So long as there exist so many degrees of perfection in the numerous and varied operations in dentistry it seems only consistent that each operator should be the judge of the value of his services and that, if he underrates them, he alone is the loser. He does himself a greater injustice than his neighbor.

Dental fraternities. That this subject is in no wise new is evinced by the fact that we have in our profession several fraternities, one, at least, of which is more than twenty years old. I am glad and proud to say that I am a member of a dental fraternity and am very certain that its teachings have been a great help to me in my associations, not only with the brethren of that organization, but with the profession generally.

Why do dental fraternities exist? Is it in order that a selected few who feel a sense of high social elevation may have something in common which may not be shared by the others? In my judgment, no! Dental fraternities are the outcome of a strong desire on the part of men who are the most intensely interested in the uplifting of our profession to maintain for themselves, and to teach to all who, in their early experience in dentistry, give evidence of a social integrity entitling them to the confidence of those who have already received them, the benefits of fraternal association.

That there are just as good men outside all dental fraternities as there are within no one will deny, yet no one will question the good that can be and is done in instilling the spirit of fraternity by these societies.

Fraternities of any kind cannot make a man any more than a silk purse can be made out of a sow's ear; but I contend that their example should yield the greatest amount of profit along the present generation and the generations to come.

I hope I have not compounded what might be termed a lot of beautiful theories which savor of the ideal rather than the real—theories which are devoid of all practical value. I certainly feel a conscientious interest in the matter, and believe that a larger amount of fraternal spirit may be had through the following channels: We must first have an earnest interest in our profession, its welfare and its growth. We must have an ever-increasing interest in one another's welfare—one which is free from all forms of jealousy, envy and injustice.

We need an increased amount of charity for the misfortunes of others, realizing that we have failures of our own for which to answer.

The spirit of giving and sharing the knowledge which we have gained by experience must be spontaneous.

We need to cultivate the social end of our meetings, for it is here that the spirit of fraternity is to be found.

Other elements of importance might be mentioned, but the fulfillment of those mentioned will bear much fruit, I am sure.

Fraternism is the working plan upon which we may expect to build our future so far as association work is concerned. Without it, our organizations will die of atrophy; with it, we shall have increased attendance and enthusiasm, and a wholesome spirit of good fellowship will pervade all our meetings, such as many have never experienced and some have never suspected.

Discussion. *Dr. G. E. Hunt,* Indianapolis: Fraternism in dentistry is something that I have been interested in for a number of years. I agree with the essayist that most of us do not attend society meetings solely for the purpose of hearing papers read, discussing them, and listening to their discussion. Many of us take a number of dental journals, most of us take some, and we therefore are enabled to read the papers when published later. By this means a much better understanding of the author's meaning may be obtained than by hearing it read, for a better opportunity is afforded to study the paper and get its full import.

Now, the clinical side of our meetings is based on an entirely different footing. Here it is that many valuable ideas may be obtained, and hence it is really necessary that we attend the clinics on every possible occasion and thus reinforce our professional training.

There is no desire on my part to depreciate the literary side of our meetings, for it is undoubtedly of the greatest value and must form a part of every meeting, but at the same time it is a pleasure to see former classmates meet and talk over their experiences of the past year and renew old associations and acquaintanceships.

Another point on which I would like to touch is the subject of the dental society of to-day. It seems to me that the local society, such as the one I am addressing now, ought to be a free school and in a measure act as a training school for the state and national organizations. To help such a plan it would be far better, in my estimation, for the local societies to depend more upon their own membership for their papers and the other features of their meetings.

Dr. C. G. Keehn, Ligonier: If we put the principles of fraternism into practice as we should, we would have no need for a code of ethics, for all coming within the circle of our influence would of necessity be, or speedily become, ethical, and this without any necessity for suggestion or undue influence.

To exert a fraternal influence over our brethren, we must not ignore them and fail to associate with them, but do all in our power to attract them. If, by our actions individually and collectively, we can give outsiders the impression that fraternism is a great feature of our organization they will naturally clamor for its privileges, thus increasing the membership and at the same time help to raise the standard of our profession, both locally and generally.

As regards our advertising brethren, I would refer to a case which came under my observation, the results attained doing much to prove the value of the fraternal spirit. An advertising dentist selected a prominent practitioner of the town in which he was located and without mentioning any name made frequent references to him in his newspaper advertisements, hoping by means of comparisons to enhance his own business standing. Despite this, however, the other dentists of the town did not ignore him nor treat him as became the act, but always spoke on meeting and did everything in their power to be friendly, and the outcome of such treatment you can well guess. Owing to these methods and the entire lack of retaliatory measures, he failed to get the prominence he sought, and in the end became convinced and joined the ranks of the ethical. It naturally follows in all cases that if men of our

profession who pretend to be ethical will practice the fraternism which they pretend to have they will naturally draw unto themselves those who are less ethical and fraternal.

Dr. A. R. Ross, Lafayette: I believe in fraternism, in keeping in view the same objects as my brother practitioner, and not to criticize one of them. I have thought very seriously upon the line of what is due to the other men from a practitioner's standpoint of professional courtesy. As the essayist said, we have a social side to our dental meetings and if we meet here from different parts of our state we get well acquainted with each other, exchange reminiscences as also ideas gleaned from the experiences of our practice. For these reasons I believe that the spirit of fraternity ought to be given greater prominence in all our meetings and everything possible done to promote its growth.

EXPERIMENTS IN PLATE ADAPTATION.

BY STEWART J. SPENCE, D.D.S., CHATTANOOGA, TENN.

In making these experiments the writer had primarily in view the finding whether an exactly fitting plate is as serviceable as one slightly smaller than the jaw. In doing this several other matters which overtop this primary one in immediate interest came in, such as the effect upon adaptation of a coat of varnish or of tinfoil applied to the model, the effect of the expansion of plaster-of-Paris in producing an overlarge plate, and of a method of shrinking such a plate by heat. To the records of these this present paper is devoted.

In these experiments was used the same "dummy mouth" described in my article, "Experiments in Impression-taking," published in the DENTAL DIGEST of July, 1905, this being an imitation of the superior maxillary, with hard rubber for base and non-vulcanizable rubber to serve as mucous membrane.

An impression of this rubber model was taken in non-expansive plaster in an upper impression tray, from which impression was obtained a model in non-expansive plaster, and on this model was made a full denture or vulcanite plate, exactly as is done in ordinarily making a rubber plate; the plate was then tried on the rubber model from which its form originated to see that it had not lost shape. Following this it was shrunk by heat in the way to

be described later, in order to test whether it had gained or lost in adhesion by this shrinking.

Simultaneously was made another plate, differing only in that it was made from a plaster-of-Paris model instead of the non-expanding plaster; this plate was also shrunk with a view to improving its adaptation to the rubber model.

When these two plaster models had been separated from the impressions they were liberally treated with a solution of soap, to represent saliva, and then replaced in the impressions, and their amount of adhesion found by weighing the traction required to pull model and impression apart. Those of plaster-of-Paris separated at a traction of 1½ pounds, the others at 8½ pounds.

When the rubber model was returned to the impression which had separated from its plaster model at a strain of 8½ pounds it separated from it at 5½ pounds, which fact showed that the hard plaster surface gave better adhesion than the soft surface of the rubber model; from these results we may conclude that *the harder the mouth, if adaptation be correct, the better the adhesion.*

As it was desired that the plate made with the non-expansive plaster should come out of the vulcanizer as nearly as possible an *exact* fit, it had been invested in *very* hard-setting plaster—about fivefold harder than plaster-of-Paris—in order to prevent all contraction of the area of the vulcanite during the cooling of the plate; and then, in order to prevent all appreciable vertical contraction, its thick parts—those along the alveolar ridge—were filled in with Spence's non-contracting rubber. This rubber may be made by adding from 20 to 25 per cent pulverized aluminum to red rubber dissolved in chloroform. It has neither contraction nor porosity; does not injuriously affect pinheads; is slightly more brittle than ordinary vulcanite, and, being of a steel gray color, is intended only as a filler for thick parts of plates. It gives a spongy vulcanite if used before the chloroform has evaporated (which requires about two hours), and less volatile solvents should not be employed at all.

These two plates being vulcanized, were next liberally treated with soap solution and then weighed for adhesion to the rubber model. Results: The one made on plaster-of-Paris yielded to a traction of ¼ pound, the other to 3 pounds. So far as could be perceived by the eye, this latter plate *exactly* fitted the rubber

model, but the former showed at each heel a space of about 0.5 mm., and rocked excessively on the palate. When tested by digital pressure applied at the dental arch, two or three light touches brought down the plaster-of-Paris-made plate, but the other could not be dislodged at all in this way.

The experiment of shrinking these plates was then made: Each plate was immersed in hot water, with a thermometer, for a few minutes—long enough only for the temperature of the plate to rise to that of the water. That plate made with the non-expanding plaster showed no perceptible diminution until 150 degrees F. was reached, but at 160 degrees and 170 degrees Fah. there was a manifest falling away from the rubber model at the palatal dome and it hugged tighter the buccal surfaces. This did not, however, improve its adhesion, for this fell from 3 to 2¼ pounds, and whether it helped or injured its resistance to pressure applied along the ridge could not be determined, as it could not be thus dislodged at any time.

The other plate was similarly treated, but so great was its primal lack of adaptation that at 170 degrees Fah. no improvement was perceptible, and not until it had been raised to boiling heat was its shrinkage sufficient to obliterate the before-mentioned spaces at the heels and prevent rocking on palate. This done, its resistance to direct traction was increased to nearly ¾ pound. This was, however, by no means the chief gain. We all know that a plate may have a fair degree of resistance to direct traction and yet work loose and fall in the mouth whenever mastication is attempted, or do so even from mere pressure of the tongue in speaking, while, on the contrary, another plate, with no more "suction" than this first, may be quite serviceable in mastication and not easily dislodged by speaking. The reason for these facts was, I think, made evident by my experiment of shrinking this overlarge plate, for before it was shrunk a touch or two by the finger over the dental ridge would dislodge it from the rubber model, but afterward a very considerable amount of such digital pressure applied alternately over each ridge was required to unseat it. From this we may conclude that when a vulcanite plate rocks on the palatal dome —as most of them do—it is good practice to reduce its dimensions by immersion in hot water, beginning at about 140 degrees Fah. and proceeding to higher temperatures as the case may indi-

cate. The dentist need not fear that this operation will cause his plate to warp; on the contrary, it will tend to restore to it, if lost, the shape given by the model during vulcanization.

If, however, the plate be one made for a mouth where great alveolar absorption has occurred, so that the palate is about on a level with the ridge, and a great thickness of vulcanite has been used along the ridge because of this great absorption, then the shrinking of the plate in hot water can do little, if any, good, because, first, the palatal arch of vulcanite is so nearly flat that it cannot be brought down much by contraction, and, second, because the vertical contraction of the very thick vulcanite over the ridge, by depressing the plate at the ridge, virtually raises it at the palatal dome. The use of a non-contracting rubber is imperatively indicated in such cases, for a very slight vertical contraction is as potent for evil as a large areal contraction.

The reader perhaps noticed that the adhesion of the plate made with Spence's Plaster to the rubber model was not equal to the adhesion of the latter to the impression, the one being 5½ pounds and the other only 3 pounds. This is accounted for largely by the presence of tin-foil on the model during vulcanization, as the following experimental tests indicate:

Test 1. An impression of the rubber model was taken in non-expansive plaster and then the inside surface of this impression was coated with No. 6 tin-foil, into which was poured non-expansive plaster to make a model. After separating these and removing the tin-foil, they were tested for adhesion in the usual way. Result: 5½ pounds traction. As we have seen, in a previous experiment, where nothing intervened but the ordinary separating medium (soap solution, allowed to thoroughly dry before model was poured), the traction was 8½ pounds. This gave a loss of 3 pounds to the debit of the No. 6 tin-foil.

Test 2 was similar to the first, except that No. 60 tin-foil was used instead of No. 6. Result: ¾ pound traction; a loss of nearly 8 pounds, due to the heavy foil.

Test 3 was similar to the others, except that a coat of sandarac varnish was used instead of tin-foil. Result: 6 pounds traction prior to removal of the varnish (which was done with alcohol) and 4 pounds after. Liquid silex would probably give slightly better results, as it forms a somewhat thinner film.

From these experiments it appears that a thin film of tin or varnish causes a great difference in adhesion, and that varnish is not better than No. 6 tin-foil, from all of which we may draw the conclusions that it is better to soap plaster impressions than to varnish them, and that models should never be coated with heavy foils, and that even thin foils should not be allowed to fold upon themselves at buccal and palatal borders.

While making the two vulcanite plates above mentioned, a side-issue experiment was made, to ascertain if increased adhesion would result from casting a bead around the buccal and labial border of plate, by cutting a groove in the models. Results did not show that this method affected adhesion in either plate, for their resistances to traction were the same after these beads were cut away from these plates as they had been before. In the actual mouth this might be different, because there we deal with vascular tissue, which, when compressed, has more tendency to remain so than has unvulcanized rubber. While, however, this bead gave no gain to adhesion, it was found that by coating with liquid silex the buccal and labial surfaces of an impression, after having taken a model from it, the adhesion of said model to said impression was increased about one pound.

THE DENTISTRY OF TO-MORROW.

BY HARRY P. CARLTON, D.D.S., SAN FRANCISCO, CAL. READ BEFORE THE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, 1905, AND PUBLISHED BY COURTESY OF THE JOURNAL OF THE ASSOCIATION.

Several years ago I had the opportunity to read before the Odontographic Society of Chicago a paper on "University Training and Dental Education." I took the ground that dentistry would only be a full profession and recognized as such when the character of the men who comprised it brought its recognition up to what it should be; that as this increase in dignity and professional status must come from within the body of the profession itself, a high grade of young men must be added to its ranks. I outlined the demands of the day and the way to meet those demands, making a plea for better educated material with which to begin our

dental training, claiming that with these superior men we could shut the doors of our profession against the trifler and the tinker and reserve the training of our schools for those who brought to the work the instincts, traditions and outlook of the scholar; the result, real doctors of dental surgery.

I look on this occasion and this paper as but another chance to express my thoughts, to take another step forward, and to prophesy what seems to me the inevitable outcome. If dentistry is to continue to advance, along what lines must it go? It is pretty well conceded that mechanically we are close to the top notch, and only moderate advance can be looked for in that direction. The advance must then be along scientific lines, higher education and the encouragement of research and investigation.

Dentistry is a specialty of medicine, but the only specialty not universally requiring the degree of doctor of medicine. Indeed, dentistry should be one of the most important branches or specialties of medicine, for in the mouth begin all those processes of nutrition and metabolism which of recent years have attracted so much attention. Thus far neither the physician nor the dentist has given enough scientific study to this special area of the human anatomy, and neither knows what the other has been doing or learning or is doing and learning.

Medicine and dentistry, though cognate sciences, have always been separately studied. This disassociation is now seen to be a great error, due not alone to the fact that the relation of the mouth and teeth to the rest of the anatomy was not understood, but also because only the mechanical aspect probably appealed to those who first considered the matter; no doubt dentistry had its beginning in the pulling of a tooth. This conception of dentistry as an entity and not as an integral part of medicine has made it an art, possibly a trade, rather than a science. A correct appreciation of physiology, pathology and bacteriology—physiology representing the normal relation between the mouth and the rest of the alimentary canal; pathology showing the relation between the deranged functions of the mouth and abnormal conditions of other portions of the alimentary system; and bacteriology as an outgrowth of the study of pathology, showing the causes of the pathologic conditions of the mouth—necessitates an entirely different attitude and is rapidly bringing the child, dentistry, back to its

real parent, medicine. It has been said that "dental science has brought the diseases of the mouth, jaws and teeth so obviously under the domain of general pathology that somatic problems elsewhere presented in the body are best and easiest studied in the mouth."

The opportunities of modern dentistry are so new and vast that not only is more manipulative skill demanded, but ampler education, more insight, more sagacity, faculties to whose development nature and elaborate training must both contribute. This training must be given under the guidance of scientific teachers, non-practitioners, men of productive scholarship, men who devote their lives to the special work of teaching the various subjects which are embodied in a medical education, instead of by those who give instruction during the intervals of a busy practice.

There are new duties calling for a high degree of disciplined intelligence; to quote a recent article, "The knowledge of life and disease represented by the average D.D.S. degree is certainly deplorably deficient." How are we to remedy this? Give our young men a thorough medical training. Dentists are specialists only in their own handiwork, but the ground work is uniform and the demand for individualized education emphasizes the whole difference in our chosen tasks and ignores the great similarities. The technic of our branch of the profession, then, appears only as a small variation of the work in which we all share. The higher the level on which professional specialization begins the more effective it is. And, again, "The higher the profession the more nearly is the whole man working in every act and the more, therefore, is a broad general education necessary."

How well I remember Professor Joe Le Conte's likening of the modern system of education to the great sequoia, in which the primary and secondary schools were the rootlets and roots, the college culture courses the great bole, and coming out from it at various altitudes as specializing branches, were the professional schools that make up the university. The trunk thus dividing grew higher and smaller, but persisted as the principal member all the way, until the topmost reach of pure culture was highest of all. Specializing without culture he likened to a low-branching bush, with no hope of reaching any fair height. That the great branch of this tree of knowledge that deals with the study and care of

the human body should spring from the main trunk after a considerable height of culture, at least that of the college curriculum, which Dr. Le Conte likened to the unbranching trunk, was the contention made in the former paper already mentioned. Without this no standing among the learned professions can be had at all. The half-light of the forest depth cannot be outgrown at any less altitude.

It is equally clear, also, that the great branch I have spoken of, the study of the human frame, must go out from the culture trunk of the university tree as a whole. The least consideration of its logical relations to the general culture and to other branches of knowledge will show the justness of this statement. And, having thus gone out from the main trunk, there is plenty of room for a considerable outward and upward reach of this great branch before it begins to subdivide into the various specialties, as the care of the various portions of the human body. Thus viewed, the mouth has as much relation to medical science, as a whole, as has the care of the eye, the ear, or, indeed, any other organ or group of organs.

He would be a superficial reasoner who would deny the great culture value of the medical course. Dr. Le Conte himself found it a firm foundation in its hold on physics and chemistry and a whole group of other sciences, and yet more in its cultivation of the habits of scientific observation of facts and logical reasoning from them for the stately structure of his own scientific attainments. The man who has taken it is a doctor, with none of the weakening qualifications of D.D.S., connoting a lesser scientific rank.

Most dental schools of the present time are at the mercy of the demands of the day and age, and their students are the product of the surroundings, not the choice of the school. An ideal professional school would be one that exists for its work alone, for scientific investigation and practical instruction not given by busy wage-earners.

The dentist of to-morrow cannot be the same sort of man as the dentist of the past, whose own little sphere has been bounded by thirty-two teeth. He must be the carefully educated student in the medical branches, plus the dental specialties, and you can only make him so by following the same educational plan as in pre-

paring the doctor of medicine. Without the requisite medical education, the ordinary mechanically expert dentist is not competent to practice his profession—he can only exercise a mechanical dexterity, but with the proper education he not only exercises the same dexterity, but he has professional ability.

The mouth is a fairly good barometer of the whole system, but your merely mechanical man, as contrasted with the dental specialist in medicine, is not competent to read it, and he does not. Why? How can any man untrained in medical science understand the problems presented to him in the condition of the mouth? We all know how exceedingly often some affection of the mouth or teeth is but an indication of a general systemic disturbance of metabolism; and, on the contrary, how frequently we see a faulty dental anatomy causing nutritive derangements which are puzzling to the physician who is ignorant of the large part played by the mouth in general alimentation. These things cannot be comprehended by the merely mechanically trained dentist, as distinguished from the dental specialist, any more than they are intelligible to the physician in whose training was omitted all reference to the mouth as a vital part of the alimentary canal. He who would in the future confine his professional work to conditions involving the mouth and teeth—the dental specialist—must be a broad diagnostician; he must know the relation of the mouth to the general system and he must interpret what he sees in the mouth in the light of his general medical education.

To bring about this condition—a condition which must surely come with the passage of time—the same preliminary training in the academic sciences will be required, whether the student intends to practice general medicine or surgery, or to specialize along the lines of ophthalmology, dermatology, orthopedic surgery or dentistry.

The same general medical education must also be required, no matter to what special region of the anatomy nor to what special line of work the student intends to confine himself eventually.

What will be the results of this medical education? When this is accomplished what is going to become of your dentist? Practical life demands a division of labor; therefore, the specializing of the individual. There will be a division of the product just as in general medicine, and the natural ability of the individual will

show itself. Some are going on plugging teeth, but better able, not less equipped for that work, for this higher education is not a question alone of preparing great men for great things; it must also prepare little men for greater things than would otherwise have been possible. Another lot are going to take up broad scientific work and research—not merely the mouth, but the mouth as merely a part, and the world will be spared lots of trouble. But he who takes up the mechanical side of dental medicine has a broad and an inviting field of work before him. Thus far the orthopedic surgeon and the ophthalmologist who confines himself to refraction are most highly skilled mechanical specialists in medicine, but the medical dentist of the future will stand with them.

Consider the remarkably high degree of mechanical skill developed in the proper adjustment of a plaster jacket! Think of the tremendously complex Wullstein apparatus, devised for this purpose, and consider a man with no mechanical skill, in spite of any amount of medical education, attempting to apply such a jacket!

Dentistry, as well as orthopedic surgery, requires this highest kind of mechanical ability—take the apparatus used in orthodontia, for example; its construction and application call for the best mechanical skill, but they need back of that the academic training or they do not reach the elevation. The real professional man should possess the resources of a highly developed reasoning faculty, which comes only after years of systematic pursuit of what might be called higher or university study. It is this broad mental training that makes better dentists and better men. We are not only professional wage-earners—we live for our friends and our nation; we are in contact with nature and science, with art and literature; we shape our town and our time. Let us, then, provide the kind of men who know how to think.

Imagine a profession of mere operators; professional men! Not so; mechanical artisans. The hope of the profession lies not in fitting a system of instruction to the capacity of unpromising students, not in "substituting intellectual milk for intellectual meat, aye, even in giving this milk in small quantity because of the puniness of the babes; but in choosing students equal to the requirements of an advanced method of instruction and substituting capable men for the class that now fill our colleges."

Turning out men with broad, well-balanced minds, with the

faculty of judgment, strengthened by the mastery of principles rather than the acquisition of information. So much of the groundwork of medicine and dentistry is held in common that it is a wasteful folly to teach it in separate schools rather than in one well-equipped and well-manned institution. The cutting out of this unnecessary duplication of work is the spirit of the age and the method of much that we call our modern advance.

To summarize this point: The things that are purely ground work, physics, inorganic chemistry, and all the branches that make for the building up of the man able to see clearly, to imagine vividly and to reason correctly, as Dr. Henry Van Dyke puts it—these should be given in college. Then, all the studies necessary to the understanding of the human anatomy, physiology and hygiene should be taken in a medical course; then, and then only, is it time to specialize on oral surgery to make a dentist. It used to be said of Cuvier that, given a single bone, he could construct a whole animal, but he never arrived at that point by the study of one kind of bones only. Rather it is the method of to-day to study the whole skeleton, yes, and all the other parts of an animal as well, in order to understand one bone.

"Great truths approach slowly and dwell a long time with small minorities." Progress is the law of this American race, which stands for all that's best; truly it is a race which knows no rest. Was it not Macaulay who said, "A standing point which was yesterday invisible is the goal to-day and will be the starting post of to-morrow?"

THE PHYSICIAN'S DUTY TO THE CHILD FROM A DENTAL STANDPOINT.

BY ALICE M. STEEVES, D.D.S., BOSTON, MASS. READ BEFORE THE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, 1905, AND PUBLISHED BY COURTESY OF THE JOURNAL OF THE ASSOCIATION.

The possibilities for usefulness of the dental profession suggested to our mental horizon make us sigh and wonder if the time will ever come when the laity may receive the proper instruction regarding the real value of the organs of mastication.

Comparatively few understand and appreciate all that the faith-

ful dentist may be able to accomplish, while too many either wholly neglect this important subject or, perhaps worse, make the best bargain-counter contract possible with the man who guarantees "satisfaction or no money back" until the skillful esthetic dentist cries out, "hideous, all is hideous," "cleanliness next to godliness" will not be in that mouth.

To whom shall we turn in this hour of doubt? To the vast army of educators—ministers, physicians, teachers of schools, and all public institutions.

But the public educator will tell us that the child must learn to keep his mouth clean at home. Then how are we to use all influence possible to reach that home, while the school officials are becoming educated to this crying need of the age? Many ways suggest themselves, but our nearest relative in the field is the family physician. He it is who welcomes the little stranger into the world, advises the mother on many subjects and tells the father that such a boy will become a sturdy man. Let us ask our medical brother not to forget those protruding and receding jaws, or that those temporary teeth ought to do duty for a definite period, and that in order that they may accomplish this they should be cared for from the time that they appear as small white pearls above the pinkest of gums (let us hope that the gums are as pink as they should be), and that the loss of one single tooth means quite as much to the superstructure of that face as a sill from the side of a house. More than this, the teacher must present a clean, wholesome mouth, else his instruction will be without effect. It is example as well as precept that tells.

We would also urge all educators along this line not to lose sight of the fact that the care of the mouth ought to be included with the hygiene of the body.

The many medical specialists owe a duty to the race. A case of gastritis treated without first cleansing the mouth and its contents, certainly not! The laryngologist in operating for adenoids must realize that often sufficient bacteria may be found in a single tooth cavity to infect a whole regiment of soldiers, providing an open wound is convenient as a culture medium.

Our friend the orthopedic surgeon has opportunities for good which are unexcelled; what an array of faces for beautifying! How

much real good could be done! When will all crooked faces become straight?

It would seem as if the physician in many instances needed more than a gentle reminder, for I find in looking over literature on diseases of children that the reference to teeth consists chiefly of the physiology of development and dentition, while the neglect of cleanliness and deformity caused by too early extraction is condemned in one instance only, and the very important item of correcting deformities from causes either traumatic or congenital is overlooked entirely.

Oppenheim speaks of the unsatisfactory information to be found in medical text books, but does not improve matters much. He emphasizes, however, the fact that it is unsatisfactory. Koplik points out the effect of malnutrition, syphilis and nervous irritation.

Doukin describes the pathologic conditions commonly supposed to be due to dentition. Rotch refers to development and dentition. Holt goes into the physiology and pathology from malnutrition. Jacobi speaks of the pathology of dentition and cautions against too early extraction, and Starr refers to development and dentition.

INFECTIONS OF THE NEWBORN: BUCCAL AND SALIVARY. By Dr. Macé. The essayist states (*Revista de Medicina y Cirugia Practicas*) that infections of the buccal cavity in the newborn are rare, but that soon after birth the mouth loses its aseptic character. Muguet or thrush is the most common type of infection in infants and is caused by the oïdium albicans. The types of stomatitis most frequently observed in infants and very young children are the diphtheritic, the phlegmonous and the necrotic. Leyden has described the blennorrhagic. Cases of this latter variety have been reported at various times in the *Dental Cosmos,* particularly in the issues for May, 1903, on page 417; for November, 1904, on page 961, and for December, 1905, on page 1,506.

Infections of the salivary fluid and glands are likewise occasionally observable in infants. The infections of the glandular oral structures which thus far have been reported seem to have originated in the buccal cavity, seldom through the blood or lymph channels. Durand has observed three cases of infection of the salivary glands in the newborn; one was an abscess in the parotid gland caused by the staphylococcus, the second was in an abscess in the sublingual gland caused by the bacillus of Pfeiffer, and the third case was an infection of the submaxillary glandular structures caused by one of the various streptococcic forms.—*La Odontologia, Madrid.* (*Dental Cosmos.*)

Digests.

THE CAUSE AND PREVENTION OF RECURRENT DECAY. By H. C. Spencer, D. M. D., Newton, Mass. Read before the Massachusetts State Dental Society, at Boston, June, 1905. The scientific and heroic laboratory work that has during the past few years been undertaken and performed by Miller, Black, Williams and others has probably given the dental profession more absolute, scientific information on the cause of tooth-destruction in the human subject than we have received in any preceding era, and while the complexity of the conditions which surround us has prevented our complete mastery of initial caries, yet scientific research has been wonderfully instrumental in placing our work in the future upon a basis which will be a blessing to all mankind.

It is not my intention to enter into the province of those investigators; their work is before you—much of it of recent accomplishment, with probably more definite knowledge to come in the near future; but if Miller's investigations had given us no more knowledge than the fact that initial caries was caused by the action of acids, the product of fermentation, our indebtedness to him and to others who followed could hardly be over-estimated, as it enables us to be largely preventive rather than corrective practitioners, and it is along these lines that the dentistry of the future must inevitably progress.

The term recurrent caries, as used in this paper, refers to that form of caries which appears again after our endeavor to correct the ravages occasioned by initial caries, by the introduction of filling material or otherwise. It is a form with which we are all familiar, and which will in all probability occupy more or less of our time and thoughts for years to come. When we seek for its cause or causes, however, we find them to be so numerous with their many ramifications as to make a thorough and impartial investigation of the subject a task of such magnitude that to thoroughly master it might necessitate our starting from that period which marked the beginning of dentistry. I will endeavor to confine myself principally to the relation which recurrent decay bears to the different operative methods employed at the present time.

Each profession has an individuality of its own which has become

more or less conspicuous through years of specialization along certain definite lines. Each member of each profession is likewise possessed of an individuality which becomes more or less marked as it is nurtured in the school of experience. They represent much diversity; the difference being temperamental as well as the result of the development of certain faculties, or perhaps senses, which are of vital importance to one profession and of minor importance to another. It is the endeavor of each profession to develop to the utmost those faculties which have a direct bearing upon the calling to which they are related. Of the five classified senses we find that their relative value differs with each profession. Thus we should expect to find in the artist a well-developed sense of sight, especially relating to the esthetic; in the musician a highly developed sense of hearing, and so on with the other professions to a greater or less degree. Dentistry is most peculiarly situated in this respect, for certain it is that while the other professions depend upon the perfection of one or two senses, leaving certain others undeveloped as having no direct bearing upon them, there is hardly a faculty the development of which does not have an important bearing upon our calling, so complex is the intermingling of the several senses and faculties. The degree of cultivation to which the several senses are susceptible, other things being equal, must bear a relation to that which is already inherent. It must naturally follow, then, that different degrees of skill shown by many of our profession in some of its branches must be out of proportion to the difference in instruction received by them. That the abnormal development of one faculty is at the expense of some other or others is a matter of common knowledge. For instance, we do not look for high mental attainments in the abnormally strong man. Nor do we expect to find great physical strength in the world-renowned literatist or musician; when we do find them it is the rare exception. The same holds true also to a great extent in the case of the man of high mechanical or artistic attainments, and we do not look for the mechanical mind to become prominent in literature; and it is no disgrace to him that his inherent tendencies do not lie in that direction, for in our work our dependence one upon the other is quite mutual, and it is this intermingling of artistic, literary, and mechanical minds that has made our profession of to-day one which is entitled to respect. The diversity of

our operative technique is not to be wondered at when we consider the personal equation as relates both to patient and operator.

We must, therefore, consider other things as well as faulty technique if we wish to arrive at broad, intelligent conclusions in relation to recurrent caries.

That the predominant inherent tendencies which we possess are sure to assert themselves in our profession is proved by the tendency toward specialization followed by many practitioners. It may be followed along the mechanical, surgical, or esthetic lines, but the production of the esthetic on a scientific basis is largely the ultimate end in either case.

Operative dentistry, without doubt, shows a greater diversity of methods employed to attain the ultimate than is shown by any other branch of the profession. The natural conclusions to be drawn from such diversity of methods is that each individual operator has mastered (in his opinion at least) the manipulation of certain materials for a certain class of cavities which give to him and his patient more satisfaction than could be obtained by a different operation, although the filling material used might be the exact opposite of that used by another equally successful operator. So marked have the different methods become that the liberty has been taken—using the selection of filling material as a basis—to divide the profession into four distinct classes.

Class I. Those whose operations consist approximately of porcelain 50 per cent, gold and plastics the remaining 50 per cent. This class must necessarily represent the great minority, owing partly to the comparatively new advent of porcelain as a filling material and partly to the many complications which accompany its successful use. This class contains probably the largest percentage of men whose artistic and mechanical faculties, combined with a progressive spirit, have become the most pronounced. That this class will continue to multiply is not to be doubted, and its growth is greatly to be commended when accompanied with scientific consideration, without which, however, many are sure to meet with utter failure. Porcelain filling calls for the very highest development of the operative, mechanical, and esthetic faculties combined that the profession has ever been called upon to produce, and while its use is sure to increase as we become more expert in its manipulation, the fact must not be lost sight of that like other

materials it has its limitations and is yet far from being the ideal filling for the majority of operations.

Class II. Those whose operations consist approximately of oxyphosphate cement 75 per cent, other filling materials 25 per cent. This class, while also comparatively small, is steadily on the increase, and the men who represent it largely depend for patronage upon the families of wealth and refinement. Owing to the preservative qualities of oxyphosphate cement, of which the bulk of their operations consist, we find from this class of operators, other things being equal, recurrent decay exceedingly rare; in fact, except in those cases where dissolution of cement has occurred around the margins it is reduced to the minimum, and this class of operators must, on the whole, barring this latter cause, show a smaller percentage of recurrent decay than any other.

Class III. Those whose operations consist approximately of gold 75 per cent, plastics and porcelain the remaining 25 per cent. This class, while constantly diminishing in favor of classes I and II, is yet probably more numerous than either of those classes, and contains among its members many who have for years given their best energies to the public and to the advancement of the profession, men of whom we should feel justly proud and who fully merit the great rewards which we trust have been theirs. That this class will continue to diminish in numbers in favor of the preceding classes is very certain, and it is better for the community at large that it should do so, both from an esthetic as well as from a physiological standpoint, not to mention the personal benefit likewise obtained by the operator whose most exacting endeavors have been given in the fulfilment of his duty.

Class IV. Those whose operations consist approximately of amalgam 50 per cent, and gold, porcelain, and other materials the remaining 50 per cent. This class is undoubtedly the largest of all, and like other classes is subject to variation as regards locality. Representing the predominating class in one locality, it also represents the class least in evidence in another. Its numerical superiority is due principally to the fact that its patients do not as a whole represent the people of extreme wealth. That this class is second to none as regards the good it has done to mankind, and that some of the most skilful operators of to-day are still among its numbers, is unquestioned. Notwithstanding the fact that the

subject of porcelain filling is occupying so large a portion of current dental literature (and again it is well that it should do so), we must not lose sight of the fact that the majority of dental operations performed throughout the land are neither porcelain nor gold, but amalgam. The exact ratio that amalgam fillings bear to all others inserted it is impossible to tell. Dr. Jarvie has recently said that probably they represent 75 per cent of all fillings introduced throughout the country. This statement was substantiated by Dr. Kirk. To make a conservative estimate, it is safe to say that amalgam is used in the majority of fillings. It thus becomes our duty, no matter whether such filling material occupies an important part or no part whatever in our individual practices, to consider the introduction of that material on a scientific basis of as much importance as any operation which comes within our province. That this has never received the general consideration which its importance merits is woefully apparent. That if we are endowed with the proper professional spirit we must consider the possibility of perfecting that which may represent 75 per cent of dental operations (even though it may have no direct bearing upon our individual practice) leaves no chance for argument.

We have classified operators, taking for a basis the filling material used, into four classes, which are more or less distinct from each other. When we attempt, however, to classify the causes which lead up to recurrent decay in the order of most common occurrence, we find it to be not only difficult but also subject to more or less elasticity, for it must be very evident that the cause of greatest frequency which might be apparent in one class of operators would be almost missing in another, so great is the diversity of operative methods.

Generally speaking, there are five fundamental steps in operative dentistry the consideration of which both individually and collectively is of vital importance to the success of the operation; in other words failure will follow in proportion as either of these steps is disregarded. These important steps may be named as follows:

(1) Thorough removal of all decalcified tooth-structure.

(2) The practice of extension for prevention with proper cavity formation.

(3) The scientific selection of filling material.

(4) The scientific manipulation of filling material; and finally,

(5) The thorough observance of oral prophylaxis.

We will consider these steps in the order given.

First: That the thorough removal of all decalcified tooth-structure should precede the insertion of the filling is one of the first laws of operative dentistry. That many operations fail owing principally to disregard of this law is well known to all. Many operators admit without hesitation that it is their practice to let remain a certain amount of decalcified dentin when the removal of the same would involve pulp-exposure. Such practice cannot be too strongly condemned. It is safe to say that the large majority of alveolar abscesses are the result of such practice and that the charlatans are the only ones with whom it should find favor. That it is often quite impossible to distinguish decalcified dentin from the normal unless such structure be perfectly free from moisture is very apparent. That even when such precautions are carried out the diseased area often extends beyond the power of observation has been abundantly proved by scientific investigations. It must, then, follow that operating without the use of the rubber dam is largely responsible for many negative results. Inasmuch as thorough tooth-excavation is often the most trying part of the operation from a mechanical as well as a physiological standpoint, it must also follow that, with it, a sense to which we have heretofore given but little attention must become deeply involved. I refer to the sense of sight. Rapidity gained at the expense of thoroughness must also be mentioned as leading up to this cause.

Second: Failure to practice extension for prevention is one of the most frequent causes of recurrent caries common to both anterior and posterior teeth. The reasons which lead up to the non-observance of this practice are principally two. First, the belief that the operation will be easier and of shorter duration if such practice be not followed; and second, on account of prevalent sensitive dentin. The first has but little ground for its theory, for as a matter of fact operations are more apt to be shortened rather than lengthened by such extension. In regard to the second reason, I believe we are often justified in not carrying out such extension in those cases in which the physical condition of the patient must be considered.

Third: The scientific selection of the filling material has a direct bearing upon recurrent caries. That all teeth cannot be

saved by the same material is a well-known fact. The improper selection may be due to inexperience in regard to a certain material, to some hobby of either operator or patient, or may be based upon that which will exact the largest fee for the least trouble.

Fourth: The scientific manipulation of filling material is of course second to none in its importance as bearing upon the subject. Manipulation other than scientific may be occasioned by defective training, desire for rapidity, gained at the expense of thoroughness, or through physical inability—with which impaired vision must again be considered.

Fifth: Proper regard for oral prophylaxis is extremely necessary for the future welfare of the operation even when all of the other steps have been scientifically observed. Its importance cannot be overestimated, and is one to which the profession as a whole has never given proper significance.

Mention has been made earlier in this paper that to give all the causes leading up to recurrent decay would necessitate entering into the subject and beginning with that period which marked the recognition of dentistry as a profession. The writer, however, believes the conditions associated with the present era to be of sufficient importance to warrant our careful consideration, without going into ancient history, and inasmuch as some of the prominent causes given as having a bearing upon the subject are associated with that which is more or less inherent, we must at least go back to the point where the natural qualifications of the applicant are considered through entrance examinations to our various dental colleges.

The diversity of opinion among our dental educators as to the qualifications that applicants for admission to dental colleges should possess, shows that either they have never made a scientific study of the question or that they are somewhat deficient in their ability to grasp the situation. For instance, some believe a grammar school education amply sufficient, others an M.D. degree very essential, others place emphasis on the A.B. degree, others on a two or four years' high school course, etc.—this latter, by the way, representing the maximum education, I believe, which is required by any of our colleges for admission at the present time. That the literary standard of the applicants must be constantly raised is generally conceded, and we should be ready to go as far as

lies within our power to attain this most important object, where such attainment does not conflict with other essentials which may be even more important. It is not to be supposed for a moment that the ideal will ever be attained as to qualifications necessary in any profession, much less in ours where so many faculties are involved. It remains for us to determine the most important and govern ourselves accordingly.

If dentistry be a literary pursuit to be followed irrespective of one's esthetic or mechanical inclinations, our course of action should be quite clear. If the development of other faculties than the strictly mental are of equal importance, our course of action should be none the less clear. That the importance which the physical faculties merit have never received due regard is the firm belief of the writer. What then should be the qualifications requisite? We will take it for granted that by virtue of his position the dentist should be better educated than the average man of the community. Statistics compiled from the report of the commissioner of education tell us that the number of men who pursue their studies from high school, through college or technical schools, is but one to one hundred taken throughout the country. It is thus clear that if the dental education is preceded by a four years' high school course or its equivalent, the dental graduate has received a better education by far than the average citizen. It is a lamentable fact, however, that the vast majority of the dental colleges do not exact even this preliminary education.

The possibility that the applicant for admission to dental colleges in the future must first be a bachelor of arts or of science is perhaps too remote to warrant lengthy consideration. It might be well, however, to consider it briefly. Approximately four years must be spent in its acquisition. These four years, which are approximately from eighteen to twenty-two years of age, represent a period which is very essential to the cultivation of those senses which have a direct bearing upon our profession. Any knowledge acquired of a broadening nature must necessarily be of value to us in more ways than one as dental practitioners, and while such studies as biology and zoology, for instance, which may be taken in pursuance of the A.B. degree, are of considerable value to future practitioners, four years thus spent, unless it be accompanied largely by applied science, which is so essential to our calling, must

not be considered. Dr. Lindstrom, in a very able paper read before this society a short time ago, truthfully said: "The A.B. degree frequently represents the study of a variety of diverse subjects which leads to no definite end." We must refrain from aping the requirements demanded by the medical profession, for the two professions are quite dissimilar. Dentistry approaches that which is an exact science. Medicine, outside of surgery and a comparatively few diseases, is quite the reverse. The four years' dental course should give ample opportunity for the acquisition of that extra-medical knowledge which is most important. Technical training, in the opinion of the writer, acquired in conjunction with the classical as given in our best scientific schools giving the S.B. degree, is far preferable to either the A.B. or M.D. degree as a preliminary education. A six years' course combining the classical and technical, carefully selected, with the professional, would be an even nearer approach to the ideal.

We human beings are normally endowed with five prominent senses, those of sight, smell, touch, taste, and hearing. There are also two others not so commonly mentioned, the physical and the internal sense. As our approach to the ideal must be in proportion to the cultivation of those senses and faculties which have a direct bearing upon our calling, it is well to consider them; and inasmuch as impaired vision has been referred to as having an important bearing on recurrent caries, we will see if there are any grounds for this somewhat serious accusation.

Applicants for admission to the United States navy have to undergo examination, principally physical, to prove their fitness for the service. From the medical examiner for the recruiting station of Boston the following statistics have been obtained: Twenty per cent of all who apply for enlistment are rejected on account of defective vision. Snelling's test is used. That is, a normal eye will read Snelling's type at twenty feet, but an eye that can read at fifteen feet will be accepted. Below this all are rejected. The majority of applicants are between seventeen and twenty-one years of age. Three per cent of all who apply are color blind. These statistics are not meant to be given as a proof or intimation that twenty per cent of all applicants for admission to dental colleges are thus incapacitated, as the above tests are made without the help of eye-glasses, which, no doubt, in a large

percentage of cases, would bring the vision to a point practically normal, and of course allowance must be made for difference in the *personnel* of the applicants. It is well to remember, however, that applicants for enlistment do not as a rule represent a class whose defective vision is caused by overstudy. Has the sense of sight, then, an important bearing upon the successful practice of our profession? Most emphatically, yes. I know of no other calling where the sense of sight should be more acute. Should not some consideration, then, be given to it in connection with applicants for admission to dental colleges?

Let us consider another important sense, that of touch. Its importance to us varies greatly with the operation. In certain operations its high cultivation is not an essential; in others its highest development is not only important, but *vital* as well. Let us take, for example, the treatment of pyorrhea alveolaris and kindred afflictions generally accompanied with minute, deep-seated deposits which cannot be seen, and removal of which must precede the cure. The sense of touch in such treatment is as important as the sense of sight to the porcelain worker. The sense of sight and other senses in this treatment are secondary to the sense of touch, which is absolutely essential in its higher form, and when such sense is not inherent or possibly acquired, success in the treatment of such cases is impossible. It is also more than probable that the difference in results obtained has a certain relation to the degree in which this sense is possessed. We have a standard set for the normal sense of sight. There must also be a normal sense of touch, which, however, as yet is not so well defined.

Mention has been made of the success obtained by that class of operators, as regards recurrent caries, whose fillings consist largely of oxyphosphate cement; recurrent decay with its use, except where dissolution has occurred, being practically unknown. Too much emphasis cannot be placed upon this fact, as this material has virtues which place it in a class by itself. That it has not more generally been made use of in combination with the vast majority of metallic fillings is greatly to be regretted. That its use is frequently resorted to as a base for abnormally large metallic fillings, we, of course, well know, but these fillings must necessarily represent the great minority. Its antiseptic, non-conductive, and compatible qualities are of such value to tooth structure that it

should be used as a lining or base for *all* metallic fillings, excepting those cases where the use of it will not allow of sufficient body of metallic filling being added to insure durability of the operation. Judgment must be also exercised with its use, for its bulk and consistence will vary from that which is scarcely more than a veneer in shallow cavities to that which constitutes the bulk of the filling in those which are deep seated, and its function will vary from being a preserver, non-conductor and strengthener of tooth structure to that which offers the principal or only means of retention for the subsequent filling.

Practically, such procedure applies to the great majority of posterior operations, and necessarily of course to a smaller percentage of anterior operations, those in which full advantage must often be taken of all tooth structure to insure proper retention. In other words, where metallic fillings are employed our object should always be the maximum of cement and the minimum of metal which may be used commensurate with the strength of the operation. If this practice be faithfully carried out, recurrent decay —followed altogether too often by alveolar abscess, especially where amalgam is used as a filling material—will be reduced to the minimum, the cement not only acting as a non-conductor but as a barrier to the decay made possible by the shrinkage of such material. It would seem that the scientific consideration given to the manufacture and insertion of amalgam is in inverse ratio to the percentage of operations it represents. While certain definite rules must be followed in the manipulation of gold or porcelain, lest the operation become a failure even before completed, failures equally as bad when amalgam is used may not come to light for weeks or months after the operation. Owing to the fact that ordinarily it is somewhat more unstable than gold, students should be taught the necessity of using the extra precautions which the material demands in all steps of the operation.

Applied science down to its minutest detail as relates to operative dentistry must be carefully observed if success is to follow. It should be preceded by that knowledge obtained from standard works relating to the different branches and carried into effect at all stages under the guidance of none but instructors of much experience. Such able scientific works, for instance, as Black's "Dental Anatomy," Johnson's "Principles and Practice of Filling

Teeth," and Kirk's "Operative Dentistry" should be to the dental student what Gray's "Anatomy" is to the medical, and possession of them should be obligatory, together with thorough study of them, upon every dental student in the land.

State board examiners by virtue of their position are able both directly and indirectly to influence the future standing of the profession to an extent which is not generally appreciated. In my association with students of two different dental colleges as a student, I was impressed with one thing above all others which they had in common; which was, to be able to insert a gold filling that would pass the state board—the attention given to oral prophylaxis and other important operations being always of secondary importance. State board examiners deserve much credit which they never receive for their exacting and conscientious labors, but they, too, must base their examinations on the lines of progression, for by so doing they give an impetus to the student to perfect certain important operations which he would otherwise tend to neglect.

The last subject which I offer for your consideration—the basis of professional fees—is one which has an indirect bearing upon the title of the paper and one which to my mind is of vast importance, and in the future must be given more consideration than it has received in the past if we ever hope to put our profession on the basis which it certainly merits. This subject is generally alluded to with apologies for so doing. Some consider it too delicate to allude to, or perhaps give it no thought at all. The writer offers no apologies, for the subject is of too vital importance not to receive its proper consideration. Dentistry is a unique profession in more ways than one. Ascending from obscurity where once it was not given the recognition due to an ordinary trade, it steadily advanced along positive, scientific lines, overcoming tremendous obstacles, and finally reaching that point where it was dignified by the name of profession, the members of which were bound by a written as well as an unwritten code of ethics to follow professional instincts. It must be admitted that this abrupt transformation is almost without a parallel, and therefore it is not to be wondered at that many trade instincts still cling to many of its members. That some of them should be handed down to the present generation, however, was more than we really desired or

expected, and if the basis of professional fees was intended to be handed down to us unchanged as a reminder of our one-time obscurity it certainly has not failed of its purpose.

What are the distinguishing features which tend to separate different callings into the trade, the profession, the mercantile, and so on? Simple definitions of the one or the other fail utterly to give the true distinction, so complex are the higher senses interwoven with the professional calling. That which gives the professional man a different standing in the community than is common to other callings is not necessarily because of the superior intellect with which he may be endowed; it is well if he has it, but it is a secondary consideration. His position is due to the fact that he deals most prominently with the higher senses of the animate as opposed to the inanimate, and as these several senses are largely responsible for our existence and well-being they constitute the closest ties which can be related to the human being.

Treatment of the different senses varies in the different professions. One may deal largely with the spiritual sense, another with the physical or internal sense, and so on, but in all these cases it is the higher senses which are directly involved. It must not be lost sight of, then, that inasmuch as a certain compensation is necessary for our existence, even though we do live in an exalted atmosphere, such compensation should be based upon grounds which take into consideration the personal equation as relates to the several senses of different individuals. The physician, realizing that of two patients having the same kind of disease one may require thrice the amount of his time that the other will demand to effect the same end, finds it wholly impractical to base his fee on so much per disease, the personal equation of the patients making such arrangement out of the question. His fee is based largely upon time consumed, as any profession should be which deals directly with the higher senses.

So it is with teachers of music, who, realizing the inherent mental and physical inequalities with which they have to deal, find it impracticable to make a definite charge for the acquirement of a certain technical step which may take three times as long in one case as in another.

What is the prevailing basis of fees in the dental profession of to-day? Fully seventy-five per cent of its members base their

fees on a trade basis, the other twenty-five per cent having at last found such practice to be incompatible with professional ethics. We should, indeed, think it strange for the physician to have a standard fee for the treatment of rheumatism, another fee for pneumonia, and still another for malaria. The public at large would rightfully look with suspicion upon such a practitioner, and yet their grounds for such a basis are as strong as ours for having a standard fee for a certain kind of operation, which practice largely prevails. It may be well to mention at this time that while the only physicians who charge so much per disease (and there are a number) are classified as medical charlatans, the dental charlatans use the same basis as is followed by fully seventy-five per cent of reputable dental practitioners, and inasmuch as certain dental authorities in the state of Massachusetts have recently issued circulars to dentists for information in regard to the best means for protecting the unsuspecting public from such practitioners, it is well to remind them that until dental fees are placed on a professional basis there can be little or no protection. Suffice it to say that the charlatan who now performs five operations in the time which would rightfully belong to but one, will find it an altogether different proposition to put five hours into one when fees are based upon time consumed. The public has for generations been given to understand that fees must be based upon the kind and amount of filling material used. Such belief has made it comparatively easy to obtain three times the fee for a gold operation as for any other which may take even more of our time and skill, so thorough has been our false education of the public to the intrinsic value of filling material. Such education of our *clientèle* reflects but little credit upon us as a profession, and has been largely responsible for the great number of unsightly looking gold crowns which we frequently see, and such a customer is largely taken advantage of by charlatans. Practitioners who base their fees on the intrinsic value of material used, to be consistent, must demand a no larger fee for a porcelain than for a plastic operation. Dental educators have it largely in their power to correct this evil as well as others, and it is upon them that we must primarily rely.

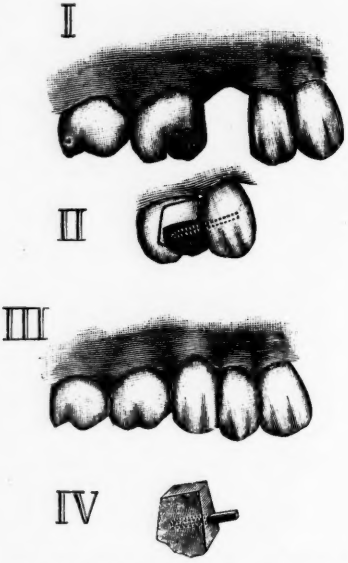
It is as important for the welfare of the public as well as the profession that as much importance be given to dental ethics as to any other branch of dental knowledge. That it has never

received that attention which its importance merits is only too apparent. While great significance is often attached to the education which should precede the dental education, graduates are turned loose to fight the battle of life with no definite understanding whatever of what constitutes the proper basis of this most important consideration. Such education cannot begin too soon, and must be put into practice by the student toward the latter part of his course, if only for a month, a week, or a day—until its importance is firmly established. This practice should also be supplemented by instruction to those who apply for treatment at the dental infirmary, informing them that outside of such infirmaries all fees should be based upon time consumed. Unfortunately, we must admit that the basis of fees has a certain relation to many negative results, and will continue to have until such basis will allow of the scientific selection and manipulation of filling material, together with the proper physical and mental treatment of the patient.

In conclusion, I wish to express my firm belief that dentistry in the future is sure to progress as it has done in the past, but that its progress will largely depend upon the application which we may make to it of the scientific and esthetic, combined with the practice of those higher qualities of true manhood, carrying with it all which the name implies.—*Dental Cosmos.*

THE ADAPTATION OF PORCELAIN TO SPECIAL CASES. By J. Wright Beach, D.D.S., Buffalo, N. Y. Read before the Third and Fourth Districts D. S., Schenectady, N. Y., October 18, 1905. When asked to present something before this convention, it occurred to me, after canvassing the available topics, that perhaps to describe a few special applications which I have been making of porcelain might be of interest to you—at least it will provoke discussion and draw criticism—two avenues through which great good often comes as frequently to the essayist as to the listeners. I am not a specialist in the field of porcelain art, neither am I an authority in the theoretical department of this esthetic branch. I am just one of the many plodders in the ranks of our profession in search of more light; therefore, what I present I trust will be freely criticized. Believing that the extreme scepticism which hitherto has existed among the rank and file of dentists has passed away, and that porcelain is now looked upon

as a necessary adjunct to a well-regulated modern practice, it seems to me that we may enlarge somewhat upon the field to which it has thus far been restricted and apply it to many of the heretofore perplexing conditions which present. For this reason, as well as for others, I feel justified in breaking away from conservatism and hazard the good opinion of this body of dentists by exploiting methods of operating which, to speak as charitably as possible of myself, are at least radical.

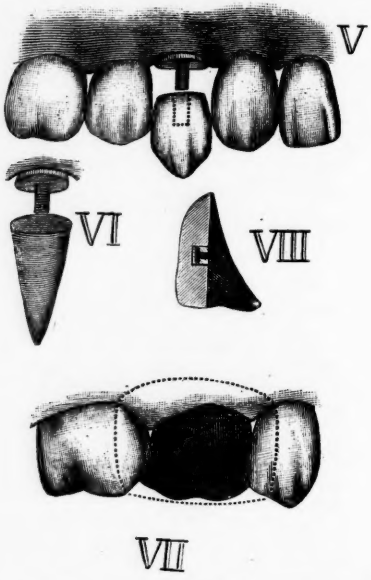


Case 1 is that of a highly organized cultured lady, whose social position would compel us to resort to almost any feasible means of treatment that would keep the glitter of the yellow metal from disfiguring her benignant smile. As shown in the diagram (Fig. 1) the second right upper bicuspid is missing, the first molar having a large mesio-bucco-occlusal cavity encroaching closely upon a normal pulp. Unusual care is exercised to obtain good seating capacity in the cavity, following the accepted rules in its general preparation, its special treatment being that of forming a broad groove of varying depth dependent upon the thickness of the dentin, extending bucco-lingually across the floor of the cavity and the

lateral walls, avoiding encroachment upon the enamel toward the occlusal surface. The matrix is now formed in the usual way, either of gold or platinum as desired. The inlay is then baked, restoring the original form of the tooth. An iridio-platinum wire (preferably), of such length as will extend well into the inlay and project two-thirds or three-quarters of the distance across the space to be occupied by the bicuspid dummy, is placed in its position at the proper time during the baking process, and when completed might be represented by Fig. IV. It is then placed in the cavity without removing the matrix and an impression taken in plaster. The bite must also be obtained and the case poured, separated and mounted. A suitable facing is selected, ground and fitted, bending the pins at right angles over the wire anchored in the inlay, attached together with hard wax, invested in ground asbestos and the parts united with porcelain as represented in Fig. II. The matrix is then removed, the cavo-surface of the inlay properly grooved and etched and cementation carefully accomplished, giving the finished product as represented by Fig. III. Occlusal contact with the dummy is relieved and the lingual cusp is not restored further than strength demands. The advantages gained are: Avoidance of exposed metal, an absolutely sanitary case and a highly artistic and esthetic result; no loss of tooth structure and no metal band to induce a state of gingivitis and pericementitis. The disadvantages are: Lack of strength in masticating (as compared with metal) and those which may be ascribed to porcelain inlays in general. We are, of necessity, forced to lay our reputations on the shrine of cement, and perhaps at times to place our faith in a higher power. However, I believe the use of cement as employed to-day to be thoroughly scientific and justified by the results obtained. The Jenkins prosthetic porcelain body was used in the inlay as well as in the attachment of the dummy. The case I have described was the first one of this character I had attempted, but more recently I made a similar one in which both bicuspids had been removed and closure of the space had occurred to the extent that only one dummy was required. The first molar being devitalized, I took advantage of the fact by inserting the posterior end of the pin into the pulp chamber and carrying it across the space, allowed the anterior end to rest in a groove made in the body of a disto-lingual gold filling in the cuspid. Although I may eventually

be disappointed in the results of these operations, yet I present this idea to you with the hope that it may be a suggestion for some one of greater ability to enlarge and improve upon, but not with my personal recommendation as to its practicability for general use.

Fig. V represents a method of constructing an all-porcelain crown. The root is prepared as for a Logan or other crown of that class. A platinoid screw-post is set in the root and projects far enough to give sufficient attachment to the crown when finished. A cone, Fig. VI, is made of German silver, copper or platinoid sheet,



slightly larger than the exposed end of the root. This is filled with modeling compound or dentalac, softened to the proper state and passed over the root and the pin, cooled by flowing cold water upon it and removed. The impression shows the end of the root with a depression representing the location of the crown post. Into this depression is inserted a piece of post metal, a counterpart of the one in the root. It is then filled with creamy cement, and when properly set the parts are separated, giving a good working model of the root carrying a duplicate metal post. A larger impression as

represented by Fig. V is obtained, also a bite embracing the occluding teeth, which is prepared and mounted in the articulator. Upon the working model the matrix is carefully formed, removed and invested, if desired, and the work of building and carving is begun. At intervals, as the work proceeds, it may be placed upon the articulated model and its restoration, occlusion, etc., carefully noted. The removal of the matrix, cementation, etc., follow in regular order. The metallic cone, Fig. VI, may be duplicated in modeling compound or dentalac, softening only the extreme base of the cone which is to be pressed against the root. The many advantages of a home-made crown of this variety are apparent to all, not the least of which is its adaptability to a broad field of special cases where peculiar construction is necessary to meet unusual conditions. There is no ready-made crown in use to-day that compares with it in but one essential, and that is in strength.

Fig. VII illustrates a use of porcelain which will appeal to every dentist present. It is a method of supplying a broken facing in bridgework—one of the most perplexing and not infrequently the most aggravating operation we are called upon to perform. Remaining pieces of the broken facing are cleaned away from about the pins which are left projecting from the backing. The pins are then separately wound about with dental floss to make the shanks as large as the heads, thus avoiding drawing of the impression by the heads. A cone of modeling compound as described is pressed directly against the backing and an adjoining facing or natural tooth, as the case may be, on either side, cooled and withdrawn. The territory, including a tooth on either side, is filled with cement, the balance and surrounding portion being of plaster. The matrix is then formed to include the territory indicated by the dotted lines, it is removed, invested as described, built up to proper form with prosthetic body and duly cemented.

Fig. VIII gives a side view of the facing in position against the backing, bisected at a point which shows the cavity for the pin to rest in, also its relative depth and breadth. It should be no larger than is necessary for the pins to pass freely into it, the prospects for good retention being lessened by an increased bulk of cement surrounding the pins.

The advantages of this method are too apparent to require special mention. However, I may add that it avoids the removal of the

bridge, in many instances, the weakening of the piece by cutting holes or grooves for the pins; in many others it also limits to a minimum the time and inconvenience to the patient. Far from the least advantage, however, accrues to the dentist himself, who cannot but experience great satisfaction at having, by a simple means, accomplished results most pleasing both to the patient and to himself.—*Items of Interest.*

THE USE OF CEMENT IN THE PREPARATION OF CAVITIES. By William Dwight Tracy, D.D.S., New York City. Read before the New York Institute of Dental Technique, October 24, 1905. In describing my method of using cement in cavity preparation, it is not likely that I shall mention anything new or original; but it is likely that my application of cement to this use may, in some measure, differ from the way it is used by others.

In times gone by, all shapes and sizes of cavities were filled with gold and amalgam, regardless of location and depth, and proximity to the pulp chamber, without any effort at insulation or protection to the pulp.

If the pulp remained vital, and through the activity of its odontoblastic layer, succeeded in throwing out a deposit of secondary dentin for its protection against irritation from thermal shock, all went well; but if, as so many times happened, the pulp became involved, and underwent the series of changes that are apt to follow its congestion and death, an abscess would form, and the chronic fistula would occur, which the patients so often call a "little gum boil."

Then, as dentists became more enlightened in regard to the pulp, its functions and its susceptibility, steps were taken to protect it, and cavities were varnished before the insertion of the fillings; then guttapercha was used as a protecting layer under metal fillings, with more or less success, but owing to its elasticity it was unsatisfactory when gold was to be used.

At this point of progress in our work, the oxyphosphate of zinc cements had been perfected to a large degree, and were being more commonly used as a filling material alone, and then in combination with other materials. The natural result of these developments was that cement should be used as an insulating layer in the deep

cavities, under gold and amalgam fillings, and this has been done for many years.

In spite of the facilities for filling teeth today, and in spite of the numerous methods and materials at our command, I am staggered at the number of teeth that come under my notice in the run of daily practice, where large occlusal and occluso-proximal fillings have been inserted in deep-seated cavities with no protecting layer of cement, nor anything else, between the mass of the metallic filling and the pulpal wall.

We find these surprising and deplorable conditions when we drill into a tooth to relieve a congested pulp, or to stay the progress of an acute abscess, or to cure, if possible, an abscess that may have become chronic—in each case the trouble being due, primarily, to a lack of care and precaution in cavity preparation and protection to the pulp.

Are you not surprised many times, in removing an old amalgam filling from a tooth in some one of the classes just mentioned, to cut down to a point where you would normally expect to encounter the pulp itself, and to find still more amalgam, through which you must cut before you may reach the pulp chamber? This shows that before the patient had applied to have the cavity treated, decay had progressed to a great depth, and that the pulp had already begun to recede, and in spite of these facts amalgam had been jammed into that cavity with no thought of protecting the pulp.

I cannot help feeling a sense of indignation rise within me when I see these frequent evidences of this sort of careless practice—some would say malpractice. It seems unfortunate that so much needless suffering should be inflicted upon patients who have paid for what they supposed to be thorough treatment, and while I cannot express my feelings in my office, I do take this opportunity of raising my voice in vigorous protest against this most common of all slip-shod practices.

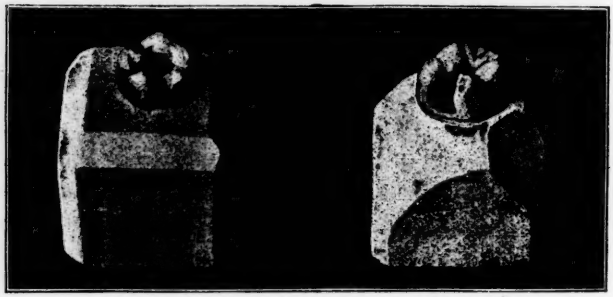
We know that when every detail of our operations is carried out to a nicety, and all possible precautions are taken, trouble is sometimes inevitable; but when trouble does come, let us at least be fortified by the feeling that we have done our best.

Now, along this line let me describe the best way that I know of protecting the pulp, and also strengthening the walls of a cavity where caries has been extensive.

Given a compound cavity in a molar, from which all decay has been removed, and which has been shaped to receive the filling, it is my habit to wipe out with campho-phenique, dry with warm air, and then, with a quick-setting cement, not only line the cavity, but build in a large portion of the space to be filled; my claim is that the cement not only protects the pulp, but sustains the weak walls of the cavity, and also lessens materially the time necessary in packing large gold fillings without in any way interfering with their strength and durability.

In order to avoid a detailed description of the manner of shaping the cement, a tooth (Fig. 1) will be passed around, showing the cavity preparation as used for a compound gold filling. The

Fig. 2. Fig. 1.



same principle applies to the insertion of amalgam, more latitude being taken, of course, in the preparation of the margins.

While the use of cement in connection with other filling materials has been more or less universal, I believe that Dr. Wm. Crenshaw was the first to recommend this particular cavity formation and application of cement, and I feel free to say that it has proved a great help to me in all compound occluso-proximal cavities.

In large simple cavities on the buccal or occlusal surfaces of the molars, it is my belief that the vitality of the tooth is more surely conserved by filling the cavity at least two-thirds full of oxyphosphate of zinc cement, prior to the insertion of gold or amalgam.

The other specimen (Fig. 2) shows the method of preparation in case of deep-seated caries on the occlusal surface of a molar. The question may arise in the minds of some as to the expediency of

inserting gold or amalgam over such a large body of cement which is put in at the same sitting; but while I have made no experiments out of the mouth, and can present no record of microscopical examinations, I can state from observation and clinical experience that teeth filled in the manner described show better results than those treated by any other method I have used.

This fact, together with the knowledge that I have saved time for the patient and for myself, and have spared the former's feelings during the operation, are the factors in the consideration of this subject, which account for my enthusiasm in recommending this method.—*Dental Brief.*

A FULL PORCELAIN BRIDGE AND CROWN ELIMINATING ALL BAKING. By Geo. A. Louque, D.D.S., New Orleans, La. Figure 1 shows a porcelain bicuspid tooth having a platinum tube running transversely through the tooth from one approximal

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

surface to the other. The cervical end is saddle-shaped for better adaptation to the gums.

To prepare the tooth for this system it is necessary that it be ground to lay as a saddle on the gums. The next thing is to hollow out with a narrow stone the approximal surfaces at the aperture, groove like, as in Fig. 2. This is in order that the iridio-platinum pin may project out far enough from tube, so that it will be well imbedded in solder after the tooth is backed, thereby giving a strong attachment for abutments or adjoining teeth.

In backing a tooth, as shown in Fig. 3, a strip of platinum foil, the width of which is about equal to the length of the tooth, is placed around the tooth from one approximal surface to the other, extending around the lingual or palatal surface, where it is pressed with thumb and fingers until perfectly adapted. Holes are punched through the platinum backing opposite ends of tube on both surfaces. A piece of iridio-platinum wire of proper gauge is then

passed through the tube. The next step is to solder the tube, pin and backing together. When using the blow-pipe the whole tooth is invested for backing, leaving only the approximal surfaces exposed where the pin projects.

Figure 4 shows tooth with backing on and invested. In assembling these teeth for a bridge, they are invested in the usual

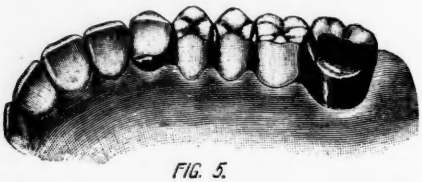


FIG. 5.

manner, and solder flowed into the interdental spaces, thus uniting all parts.

In finishing work the platinum foil is removed from palatal or lingual surface, thus making a clean and all porcelain bridge.

Figure 5 shows a bridge complete.

The practical experience of two years has proven beyond all doubt that this system of bridgework is the most natural to the parts, the most sanitary, the most beautiful and artisic of any method yet attempted.

Figure 6 shows a full porcelain crown having a platinum tube in the cervical end, running about one-third down the tooth.

FIG. 6.

FIG. 7.

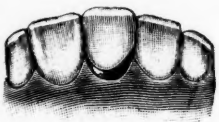


FIG. 8.

To adjust this crown it is ground at cervical end to fit over a cap and pin. This done the crown is backed with platinum foil and a hole forced through this foil opposite tube. A piece of iridio-platinum wire of suitable size is passed through foil into tube, the whole invested and soldered thus attaching tube, pin and backing together, Fig. 7. The cap and pin fitted to root are then united to crown by soldering to the backing attached to the crown.

Figure 8 shows a crown complete and in position.

HIGH-PRESSURE ANESTHESIA AS COMPARED WITH CATAPHORESIS AND NITROUS OXID AND OXYGEN.

By D. H. Ziegler, D. D. S., Cleveland, Ohio. Read before the Northern Ohio Dental Association, at Cleveland, June, 1905. It is not my intention to come before you and preach painless dentistry, but to discuss such methods as may help us to obviate pain. Your conception of painless dentistry may be radically different from mine. As a profession, we are trying to reach that ideal where moral conceptions of painless dentistry are pure conceptions of reason, because an empirical element of pleasure and not of pain would be the result of our operations. Let each one answer the question for himself—are we giving our patients that element of pleasure which it is in our power to give?

We have men in the profession who have done much toward eliminating pain, and their methods afford us, as a rule, a model for imitation or criticism—their methods serve us as a standard of action with which we may compare ourselves and which may help us to reform ourselves. Although the perfection they claim can never be attained by us, yet it is our duty to obtain a complete knowledge of all their methods—it is necessary to possess a knowledge of everything that is possible and to determine it thereby in a positive or negative manner.

The two great methods used are cataphoresis and high-pressure anesthesia. I might add another, and with me it is by far the most satisfactory—that is, prolonged anesthesia with nitrous oxid and oxygen. Let us consider each one separately.

The term "cataphoresis," from the Greek, meaning to carry along, appears to be correct, for there is little doubt but that medicinal agents can be bodily transferred by the aid of an electric current without suffering decomposition, at least in part. This subject has been discussed, pro and con, before this society, and it is with fear and trepidation that I again introduce it, but it remains a fact that it is an agent par excellence when properly managed.

I shall not enter into a discussion of this subject, only so far as it may help us to draw a comparison with other methods. The principles involved are, namely, osmosis and electrolysis; according to Doctor Price the cocain is split up into ions, and the electro

negative ion is the part which enters the dentin and which produces the anesthetic effect.

Time has proven that this action has no deleterious effect upon the pulp, providing too large a dosage has not been used, and with the aid of the ammeter the operator can tell just how much current is passing. The ammeter is just the same in cataphoric administration as the scales and graduates are in the dosage of medicine. It remains a fact that frequently after I have put forth my best efforts, a horrible failure stares me in the face, but invariably it can be traced to some source of imperfect application.

There is no process in dental practice in which success depends so much upon the precise carrying out of every little detail as in cataphoresis. The following may be enumerated as some of the little things which produce big failures:

The slipping of a clamp; the leakage of the rubber; the presence of an unsuspected filling; a broken connection; pressing the rubber below the enamel margin in the region of the cavity. In large cavities cocain does not penetrate to any extent in a lateral direction, and many operators fail to succeed by overlooking this fact; in cavities of this nature it becomes necessary to confine your solution to a small space, and anesthetize the pulp—an unsteady electrode is often sufficient to cause a failure; during the application of cocain the rapid loss of the solution by electrolysis, which is going on in the cavity, produces a constantly changing resistance. It is, therefore, important, as one of the first steps, to secure the electrode in the cavity in such a manner that it will be steadily held, and the cavity must be kept constantly moist with cocain. In other words, to secure success it is necessary to have perfect insulation. If this is accomplished, I honestly believe that 99 per cent. of all teeth can be anesthetized, providing sufficient time is spent on the cavity, but right here is where the great drawback to this system comes in. It is claimed that the average time consumed is from eight to twenty minutes, but my experience would place it from twenty minutes to one hour. The advantages that can be claimed for this system are:

First: It is not necessary to drill a pit into the healthy tooth in order to make your application.

Second: The dosage is under the control of the operator.

Third: No pathological effects.

The disadvantages are:

First: The minute attention to every detail in making your application.

Second: The length of time consumed.

High-pressure anesthesia is a method recently introduced. As you are all familiar with the instruments used to accomplish it, it is not necessary to describe them; as to its merits I feel safe in saying that it is one of the most successful and useful procedures we have, providing the physiological effects are not of such a nature as to bring about pathological conditions. The secret of success lies in forcing the solution through the tubuli and anesthetizing the pulp; these tubuli are microscopic and about one-thirty five-thousandth of an inch in diameter; within these tubuli lie the dentinal fibrillæ, which are processes from the peripheral cells, the odontoblasts of the pulp.

Dentin itself is an elastic substance; a cube of eight-one hundredths inch, under a stress of one hundred and fifty pounds pressure is compressed four per cent of its thickness, resuming its form after removal of pressure. With these few facts, let us reason what the natural result might be.

The syringes are supposed to have a pressure of three thousand pounds to the square inch, after securing a perfect contact point and the solution is sent on its mission; is it not reasonable to suppose that all organic substance in its path must be scattered in some direction, presumably towards the odontoblast and pulp? Secondly, the dentin being elastic and with this enormous pressure back of it, it becomes a reasonable deduction that in teeth where dentin has formed at the expense of the size of the dentinal fibrillæ, and the solution should meet with an extra amount of resistance, that it would be possible for the dentin to expand towards the pulp and help to produce an irritation. This can readily be understood by studying the histological construction of the pulp.

The arterial supply of the pulp enters the apex of the root, which subdivides, and the vessels lose their muscular coat at an early period of subdivision. The capillaries which lie beneath the odontoblastic cells join veins of larger size in which the middle coat appears to be absent. Is it not evident, then, that should pulp arteries and veins lacking this muscular coat be subjected to increased intravascular tension, such would produce danger of injury

to their walls and bring about hyperemia and inflammatory conditions? This condition is imminent and cannot be disputed. Of course, it remains to be proven that this slight mechanical disturbance, as stated, can bring about this condition. To me it is possible and probable. In the application of this method it is necessary to drill a small pit into healthy dentin, and this I have not been able to accomplish without causing some discomfort. Of course, the discomfort is so small, when taking into consideration the amount of pain you are able to obviate, that it is hardly worth considering.

Another source of danger is the combination of medicaments used. To anesthetize a tooth for the preparation of a cavity, I fail to see the necessity of combining adrenalin chlorid with cocain—cocain is considered a general poison of protoplasm; it produces a feeling of constriction and contraction of the vessels; its astringent feeling is easily explained by its affinity for protoplasm. So with this drug, we have an agent that produces paralysis of the vessel-walls; *i. e.*, of vasomotor nerves. Black's researches show that vessel-walls may recover their tone and the vaso-constrictor nerves their functional activity after slight paralysis, but if they are subjected to over-stimulation they become inactive and the vessel-walls yield to the pressure of the blood column and the result will be death of the pulp. The reaction depends wholly upon the amount of disturbance there has been produced in the blood vessels; therefore, the less constriction there is produced, the less danger there is of any after-effect.

If it were possible to measure the dosage, the same as in cataphoresis, so that we could carry our tooth just to the point of true anesthesia and not produce an over-stimulation, this method would be par excellence to anything we have to-day, but, as it is, time alone can decide what the final result will be.

The advantage of this method over cataphoresis is a saving of time. One disadvantage is that it is not always possible to drill a pit into the cavity, but often becomes necessary to drill into the healthy part of the tooth. Second, danger of carrying infection into the pulp, unless the pit is drilled into healthy dentin. Third, if a pit is drilled through the enamel, it must be enlarged so that the sides of the needle will not press on the enamel margin. I

have seen the enamel of bicuspids checked clear across the buccal surface by trying to make a contact in this manner.

The preparation of cavities with nitrous oxid and oxygen is one of the most satisfactory methods I have ever used. With this method I apply my rubber dam and prepare my cavity as far as possible, then apply the nose-piece and hold the patient with nitrous oxid and oxygen until the cavity is completed. I have held a patient long enough to prepare two compound cavities in bicuspids. The drawback to this method is that the majority of patients do not like to submit to being anesthetized, and it is almost necessary to have a competent assistant to look after the anesthetic.—*Summary.*

GOLD AS A FILLING MATERIAL. By J. V. Conzett, D.D.S., Dubuque, Iowa. Read before the National Dental Association, Buffalo, July, 1905. Gold when properly manipulated still maintains its preeminence as a filling material. I say, when properly manipulated, for a gold filling that is not well made and that does not hermetically seal the cavity is a poorer filling than one that is made from any of the plastics. While it is true that a good gold filling is the most permanent one that we have, it is equally true that a poor gold filling is the most ephemeral one, when judged from the standpoint of its preservation of tooth structure. For a gold filling that is not well made allows the fluids of the mouth to penetrate between it and the dentin, and the process of decay immediately recommences. Therefore, it behooves us as dentists, if we wish to use gold, to study its peculiarities and to know how to use it. For the better we become acquainted with it the more will we appreciate its qualities and use it where permanent results are desirable.

There are many forms of gold that are used to-day for filling teeth, and all of the various preparations have their good qualities. We have the foils both cohesive and non-cohesive, the various cylinders made from the foils, and many crystal and mat forms. Each of these preparations has its advocates, and in the hands of experts all give excellent results. However, after having tried all of the different preparations, I have discarded them, and for some years have used only the foil prepared in the manner which I shall describe later.

It will not be possible for me to outline the method of cavity

preparation in the time that is allotted to me. I can only say that this phase of the work is, of course, of the greatest importance. For a filling that is made ever so well cannot be a success in an improperly shaped and prepared cavity. I follow the methods of cavity preparation as taught by Drs. Black and Wedelstaedt, and having prepared the cavity as I deem proper by my study of the condition of the tooth and its environment, I am ready to introduce my gold.

Three objections have been urged against gold as a filling material; its color, high thermal conductivity, and difficulty of manipulation. These objections are all valid and yet in some positions can be entirely, and in other places partly, overcome. Its color is objectionable in conspicuous cavities and cannot be overcome, but in places not too conspicuous its color is not bad, for it does not darken nor discolor the tooth; its thermal conductivity can be very largely modified by varnishing the cavity, and the difficulties of its manipulation can be overcome by an intelligent study of its properties, its physical characteristics and peculiarities.

Gold foil is naturally cohesive when perfectly pure, and all pure gold is cohesive. If an impurity of any description be deposited upon the surface of the foil, it loses its cohesiveness. In preparing the non-cohesive foil, a film of gas is deposited upon the surface of the foil. If this gas be one that is easily driven off by heat, as ammonia, the foil immediately regains its cohesiveness upon being annealed. If, however, the gas deposited be one that cannot be driven off by heat, as carbon dioxid, the result is a foil that is permanently non-cohesive and that cannot be made cohesive by annealing. Inasmuch, therefore, as there are impurities in the air about us, and especially in our operating rooms and around our cabinets, it is well to protect the surface of our foil from possible contamination by agents that cannot be easily removed. Dr. Black advises doing this by keeping in the gold box an open dish of ammonia, the gas of which will be deposited upon the gold, protecting its surface from contamination by any other agent; and then, immediately before using, anneal the foil, driving off the film of ammonia, when a perfectly pure and cohesive surface will be secured.

Nearly all of the non-cohesive, or so-called "soft" foil comes with an ammonia-protected surface, so that if those foils are used

it is only necessary to carefully protect the gold, and not allow it to become too old before using.

We prepare the foil that we expect to use as cohesive gold in pellets of 1-8, 1-16, 1-32, and 1-64 of a sheet. In doing this we take a sheet of foil and divide it into the proper number of squares, then folding the corners in toward the center, fold the square into a pellet. We do this that we may know definitely just exactly the amount of gold that we are using when we pick up a pellet of gold. We believe that definite methods produce definite results, and, as the force and number of blows of the mallet that are necessary to condense a given piece of gold have been worked out in the laboratory, we know when we place a 1-32 of a sheet pellet, for instance, upon a filling, the number of blows of the mallet required to condense that piece.

The filling is started with a 1-64 pellet tucked into the linguo-gingival-axial angle, as a rule, and malleted carefully to place, always malleting from the center toward the walls of the cavity. We use the hand mallet because we believe that it gives the best results. Dr. Black, in the *Dental Cosmos* for September, 1905, gives a series of tests that he made with different mallets. Fillings were made by many operators with mallets of various kinds, and the results were vastly in favor of the hand mallet when used with considerable force. Next came the automatic mallet, and last and very far in the rear came the electric engine and mallets of the woodpecker species in general. I know that certain operators claim that they can make dense fillings with these mallets, and I have no desire to dispute any assertion that they may make on that score. I only wish to say, and to say it with emphasis, that I cannot —and I know, for I have tried it. I used the electric mallet for two years and I do not need to go to my records to tell me when and how one of those fillings was made, when a patient presents one for inspection. It bears the pits upon its face. The fillings that I made with the electric mallet have caused me more grief and humiliation than all of my other operations put together. So we use the hand mallet in the hands of a trained assistant. We do it because we can make better operations and make them much quicker.

The filling is built up piece by piece, always malleting from the center of the cavity toward the walls, thereby causing the gold

to be driven or "flowed" toward the walls, making a moisture-proof joint. Never under any circumstance should the point of the plugger travel away from the walls of the cavity. The last blow upon a given pellet should be the one that sends it snugly against the wall. We know that malleting or pounding gold tempers it and makes it hard and springy. Therefore, if we mallet the piece against the wall first and then toward the center, we will have made the piece hard and it will draw away from the wall of the cavity as our plugger point travels toward the center, and all of our malleting afterward in order to drive it to place will be in vain, and we will have an imperfect place in the filling.

Then, again, the plugger point should be used in a definite and intelligent manner, not here and there haphazard. Beginning in the center of the cavity the plugger should be stepped in an orderly sequence of steps from the center toward the walls of the cavity until the whole pellet shall have been thoroughly condensed. We insist upon holding the plugger point firmly upon the gold, using considerable hand pressure in addition to the mallet force, for if the plugger is held away from the filling, the greater part of the force of the blow of the mallet is dissipated in driving the plugger point down to the gold, and the gold is not properly condensed. A perfect gold filling should very closely approximate cast gold in density. It should have a density of from 19 to 19.2 specific gravity. In order to most closely approximate such density it has been demonstrated by laboratory experiments that it requires twenty blows of the mallet for a 1-64 of a sheet of foil, forty blows for a 1-32, eighty for a 1-16, etc. The force of the blow must, of course, be regulated by the size of the plugger point, as the force of the blow to produce the same result must increase according to the square of the diameter of the plugger point. It is obvious, too, that a small plugger point is therefore advisable. We never attempt to adapt our gold to a polished enamel margin, for we know that it is almost, if not quite, impossible to adapt cohesive gold to a polished surface. Perhaps every man in the Black and Wedelstaedt clubs has tried, and not one has been able to do it; perhaps others can—that remains to be demonstrated. But we do know that we can adapt the gold to a planed surface, therefore we do not polish our cavity margins with sandpaper disks, etc., but plane them with sharp chisels and hoe-shaped excavators.

The operators of the old days knew nothing about cohesive gold, and yet they made some very beautiful and lasting fillings. With the advent of cohesive foil, however, the profession, in its delight with the new, forgot the good qualities of the old, and the use of non-cohesive foil passed into desuetude. We are beginning to appreciate the fact that that was a mistake, and at the present time we are combining the two, using the good qualities of both, and eliminating as much as possible their bad qualities. In cavities in the approximo-occlusal surfaces of biscuspids and molars this method saves times, energy and nerves.

The non-cohesive or unannealed foil is prepared by cutting a sheet into halves and quarters. These are then folded into ribbons of varying widths, and these are in turn rolled into cylinders upon a Swiss broach, a hatpin or other suitable instrument. In using them, for instance, in a cavity in the mesio-occlusal surface of a molar, a quarter cylinder is placed in the linguo-gingival angle, and one in the bucco-gingival angle, and these are keyed to position by placing one or more half-sheet cylinders between them on the gingival seat and then strongly condensing them with hand pressure, which may be followed by mallet force if desired. After this we commence with our cohesive foil, anchoring it in the step in the occlusal surface and building the gold forward and over the unannealed foil in the gingival third of the cavity, effectually locking it into place. By using this method we not only gain a better adaptation at the most difficult point of our cavity, the gingival seat, but we reduce the time of the operation very materially. Another place in which we use the non-cohesive cylinders is in cavities in the occlusal surfaces of molars. The cylinders are placed on end against the pulpal wall of the cavity and wedged to place until there is but a small space left in the center of the cavity that is not filled. In this we now place small pellets of cohesive foil until the cavity is entirely filled, and then condense the whole filling thoroughly.—*Dental Cosmos.*

FACTORS OF SUCCESS IN DENTISTRY. By T. Ledyard Smith, D.D.S., New York City. Read before the New York Institute of Dental Technique, November 28, 1905. As all things are relative only, the question, "What are the prime factors of success?" as applied to dentistry, would perhaps be answered by no two

people alike. As one views life and social conditions from one's own individual conception, naturally no two will give similar answers. One's principles and aspirations embrace the scope by which one is capable of judging all matters.

Even the word "success" may have for each one of us such a meaning that were we to compare our ideas, a discussion would follow since our desires and aims differ.

A man who has studied and toiled and who has perhaps even suffered privation to accomplish some one object that shall bring him distinction, some one life endeavor in which he has put his soul and mind, would accept no money were it to obliterate his life's work. To have achieved the object of his soul, of his life, is to him success.

To the man who advertises "Full sets, $4, gold fillings from 50 cents up," a gross business of $20,000 with the year's balance sheet showing a profit of 40 per cent, this to this man would mean success. Thus, a sign board marked "This Way to Success" would convey to no two of us the same meaning or the same measure of satisfaction, except in a broad way.

The qualifications, natural ability and accomplishments that go to make success, as commonly understood, for a dentist, are many and cover a broader field than is required in many another undertaking. In direct relation to his calling, the dentist will have acquired a knowledge of the thousand and one details that are developed and called into active play.

To be a success as a dentist, he will be an expert in every department. To be an expert, means that, he must have primarily the natural requirements of mental gifts to enable him to perform deftly the technical work of the high-grade mechanic.

He should be an adept in every department that embodies mechanics and the arts. He should have the mental endowments of an artisan and inventor; the digital ability of the mechanician; the temperament of the artist, with an eye for color, form and harmony. He must have the attainment of the idealist with the practicability of the materialist.

He must possess the knowledge of a specialist in medicine and surgery, and have that keen perception and quick judgment that will enable him to be a ready diagnostician. He should be a reader of humanity with an inborn sense enabling him to distinguish and

classify every phrase, realizing the type that should stand for perfection or its semblance, and be able to distinguish the various grades of degeneration this side of that standard.

To be successful, the dentist should be more than simply capable. He should have the bearing of a gentleman, the sympathy of a humanitarian, the deference that accompanies a strong character and the forbearance of the charitable, with the positive and dominating spirit of a leader; and through it all, his personality must shine in no uncertain light and what is more important, no displeasing way.

In addition, he should acquire the methods of the business man. Not necessarily the methods of commercial life, but those methods that are best suited to carry on the business details of his profession. With the ability of an expert operator, his financial success will ever remain in perspective if his business methods are faulty.

Qualified to the letter of the foregoing, a dentist with a recognition of his talents and a comprehension of the field before him will build his measure of success.

In the routine of his busy times the dentist will meet with every phase of dental disorder and will be called upon to recognize at a glance the requirements of the cases presented, all varied in their character, scope and demands. He will comprehend at a glance the morbid condition of any given case and his mind will at once drift to its etiology and grasp a specific for its cessation. Correctly speaking, but not always probable, he will have on the top leaf of his memory all that is embraced in the text-books of his curriculum and he must have a working knowledge of the mechanics that operate in the fields of prosthodontia and orthodontia. He will be called upon to diagnose, prescribe, advise, plan, invent, conceive in his mind's eye a finished result that will more often than not call on his artistic talents as much as his acquired ability; and, withal, he must adjust his procedure to harmonize with the exigencies that exist.

The dentist will be a success in proportion to his versatility, in that he is alive to every detail of his business; meeting every requirement, avoiding errors, neglect and omissions by forethought, keen judgment, tact and memory. Indifference to any of the many qualifications towards success means a deduction from the sum, corresponding to the magnitude and importance of the neglect.

The elements that bear a relation of weight to the whole pound of success may be considered arbitrary, since no two people will similarly view the importance of any one factor. What to one is essential, is to another of but little, if any, concern. By indifference to essentials one will fall short of the full range, and will score only in those things which he recognizes as important, or in which he is capable and competent.

By one's ability or lack of it, by his recognition or his ignorance of what is really essential, by his alertness or his indifference will he occupy a position on the road which has marked at one end "success" and at the other "failure."

Perhaps even a moiety of every possible requirement tending toward success might gain for the dentist a nearer approach to that end, than to be a genius in one or two things only, with ignorance and indifference in other directions.

The foregoing is a general statement of qualification. The following is a slight survey of the dentist's field—the people.

When there shall be found a cure for cancer, a remedy that shall obliterate cancer; when there shall be found a cure for consumption; when there can be saved one hundred per cent of typhoid and other cases, then it will be time to expect absolute prevention of caries. Dentistry then will be unnecessary. Dental colleges may then be closed and sold for factory or other uses. People will only need to go to the department store and purchase a ten-cent package of "decay preventive."

Until that time arrives, however, the dental conditions that now exist in all their variety will continue. Teeth will decay and crumble. Abscesses, necrosis and kindred troubles will develop as usual.

At present whenever these mal-conditions become extreme with the individual, dentistry is called in. Up to that point, every one is his own consulting dentist; his own expert as to the condition of his mouth. But for this neglect by the people, dentistry would really suffer. Plates, crown and bridge work would not be needed. If mouths and teeth were examined and cared for as often as a man has his hair cut, extreme disorders would be rare. But this is the very thing people will not do, and what is peculiar, too, is that every dentist in the land advises this very thing,—"avoid neglect;

have your teeth examined often,"—advice that is contrary to his material welfare.

We all, every day, see people who have not been near a dentist in years. These people declare that nothing can be done for them. "Any way, it will hurt;" then, too, "it will cost a fortune." It is neglect that gives us our work; that even makes the field so large that it can be specialized. It has built up a commercial side to dentistry that commands millions of capital.

The neglect that falls to the lot of teeth, can be assigned to two causes, viz., fear of pain, and expense. Lack of pride may be added, but would apply mostly to a class of people no dentist wants.

The first cause may in time be lessened by methods that will modify much that could be disagreeable if not painful. To this end we all strive, and to the advertising parlors with their man in green and gilt at the door, are we all indebted, for whether or not they make good their loudly-proclaimed painless methods, the fact stands out that the public is beginning to believe that painless dentistry is an established institution.

Those who come to us do not go to the advertising man, but they read his signs and his advertisements and reason that if he has painless methods we should certainly have them. It spurs us to live up to his claims. Through these advertising men, they at whom nearly all dental laws are aimed, the better class of people are benefited in being taught confidence in dentistry. They look to us to do as well. We in turn profit by the incentive forced upon us to live up to that claim. It is another proof that nothing is bad, that everything is good, conditions being only relative. We speak of a condition as bad only because we know of something better. As "David Harum" says, "Everything goes by comparison."

When dentistry can be practiced absolutely without pain by every dentist, then there will be remaining the one and ever-present cause for neglect—expense. That will always remain with the people, or until socialism reduces the hilltops of plutocracy and fills up the valleys of poverty, making all people equal; which is equivalent to never.

The people who consider that a healthy mouth is necessary to their general economy are in the small minority. They are few indeed who realize that one cannot be healthy with impure blood;

that nearly all blood or other disorders are either subject to or caused by the conditions of the stomach, that receives not only the food that is carried directly to the mouth and swallowed, but parts of food that is food no longer since it has decomposed around and about the teeth, in cavities and gum pockets, creating a condition sufficiently foul to cause everything on the medical calendar. With the absolute filth that may be found in mouths, together with pus sacs from abscessed conditions, constantly draining into the stomach, mixing with saliva and food, it is a wonder that hospitals are not overcrowded.

Few indeed stop to consider that neither the lungs nor the stomach should be compelled to convey to the system the poison that the breath and food pick up while passing through a foul mouth. One may do so and live, but noxious elements little by little are conveyed to the system, which in addition to the ever constant and natural catabolic function—that of caring for its regular waste—the system must be burdened with eliminating these extra harmful products, if it can; and if not, if the burden becomes too great, acting in disagreement with nature's order, then some sickness, disease, or disorder will develop, which one then calls a physician to correct. To the neglect of the mouth and teeth the physician and the dentist are indebted for much of their work.

The desire for relief from pain brings us a few people. Pride newly awakened to a sad dental condition, brings a few more; while now and then we meet persons who realize the importance of keeping their teeth in a condition that will help maintain health. These are the ones who seek dental aid. But a big per cent of the people have nothing done, or at most but little, and that at long intervals. Their ignorance of the importance of sound teeth and a healthy mouth, combined with their fear of pain and that important item expense, keeps the majority away from dentistry.

Dividing the population of the United States by the number of dentists would give each dentist about twenty-six hundred people to work for, but it is a safe statement that not one-eighth of even that number comes to the average dentist in one year. It is possible that the question of fear of painful operations may in time be overcome in the minds of the people, through a better knowledge and greater confidence in advanced methods.

The question of indifference or ignorance could best be regulated

by a system of teaching that could be conducted in all the public schools of the country. Such a study would be of far greater benefit to a growing race, destined to be at some time mothers and fathers, than a knowledge of English history or some equally impractical study. The question of expense will be treated by the people in proportion as they better understand and appreciate dentistry.

Referring again to dentists, it is doubtful if any class of persons engaged in any one undertaking offers more value for so limited a money remuneration, coupled with so much real benefit in the combined points of relief from acute pain, cures from ills, prevention of systemic maladies, together with the cosmetic effects embraced in the extensive fields of prosthodontia and orthodontia, as does that class known as dentists, and who as a class are generally considered with no distinction above that of dressmakers, milliners, tailors, barbers and so on. This low tone of respect is deplorable and ofttimes humiliating.

Comparing our remuneration as dentists with other professions, it would seem that we receive the lowest of all. It is not unusual to hear of stage artists receiving from one to ten thousand dollars a week. A surgeon really belittles himself for charging a fee of $25 for anything, and often performs operations requiring no extraordinary skill for which he will get hundreds.

No lawyer of any account will open a case without a retainer; and it will be large enough in itself alone to pay his wife's dental bill for a year or more. A consultation with a specialist means a fee of five dollars at the least. Do dentists ever get ten or even five dollars for giving their opinion as to the best thing to be done for any case presented?

It is a fact beyond contention that dentists stand to-day better qualified to meet the demand on their talents than ever before, but, in inverse ratio, they are lowering the scale of prices in a field that is now broader and more intelligently directed, instead of graduating the scale upwards to correspond with the ever-rising standard.

The department of prosthodontia alone has broadened in a magnificent way, making the up-to-date methods of handling porcelain to repair waste from decay, breakage and extraction as a field standing by itself and not to be compared with what may now be considered out of date—rubber work; and yet much of this new

prosthetic art is bringing fees no greater than those obtained for rubber work in the past.

If the average dentist will at the end of the year, deduct the expense of carrying on his business,—such items as rent, payroll, materials, and any other that may be included,—from his gross receipts, the remaining sum will represent what he may call his profit; his salary, as it were. This sum, his salary, will in many instances be no greater than the lowest political salary; or no more perhaps than that of a policeman, a comparison with whom in any other respect would be to the discredit of the dentist.

It is a saying that a thing is worth what it will bring. It may be equally true as to individuals but, considering the benefits accruing from dentistry and the talents necessary to supply those varied benefits, it would seem that the income of a dentist should embrace five figures, but it is a safe statement that the sum left after deducting his rent and office expenditures, will be covered by four figures, and the one to the left will be a small one at that.

As a body, we should try and emulate the spirit of those of the dramatic profession, who strive to outdo each other in point of high salaries. Since our public have been so badly instructed it may prove no easy matter to change their estimation of our services. Still, it could be done by constant unanimous effort on our part, and constant agitation at dental meetings and in the dental journals. Nothing is stimulating unless it shocks, and the public should be stimulated into a better appreciation of dentistry by being shocked with good wholesome bills.

The law of suggestion is always forcible and may be used with good effect in many ways. As an instance, tell your patients at appropriate times, simply to impress them with an important fact, that the dentists of the United States buy in one year six million dollars worth of gold; this is one item alone which they give to the people free, since they charge for their services and not for materials used.

Porcelain, that may be bought for less than two dollars an ounce, brings higher fees than gold, which costs the dentists thirty dollars an ounce.

There has been some reference made in the journals to the old and the new schools in orthodontia. There is also an old school of strictly professional dentists and a new, growing class of com-

mon-sense business dentists. To the younger members of the new school it may be said: Raise your own estimation of yourself to correspond with your growing proficiency. Raise the valuation of your services to meet your new standard. Work for money. Work for cash or as near it as the conditions surrounding the case at hand will permit. Remember that a dollar carries more inspiration, greater incentive, than the promise of any post-mortem glory. —*Dental Brief.*

BLUE LIGHT ANALGESIA. By Harvey Hilliard, M. R.C. S. Eng., L. R. C. P. Lond. Those who are familiar with the attractive work of Lord Avebury on the influences of blue, violet and ultra-violet rays upon ants; who are familiar with the work of Professor Roentgen wth x-rays, with that of Professor Finsen on the therapeutic value of light, and whose minds are impressed by the wonderful action of light in photography, and in nature generally, will hear with no shock of surprise that blue light is capable of producing analgesia in human beings.

By the courtesy and kindness of Prof. Redard—the discoverer of this method of mitigating pain—I learned the technique of his application of blue light, and in the hope of finding some improvement on the methods at present at our disposal, I determined to see for myself to what extent this agent could be utilized for producing analgesia. I began work full of scepticism, but was so much struck by the success of my early results that I published a short report of them in the *Medical Times* of May 20, 1905. In doing so I hoped that others would test the action of blue light upon the organism, and make known their conclusions; for I felt that a judgment, formed upon the experiences of but one worker must necessarily be less sound, than when data gleaned from a wider field are available; also that many fallacies may creep in to mislead one experimenter alone, which could be eliminated from the collective work of many.

Before trying the method on a single patient, I had it tried upon myself and noticed the following effects, which have also been corroborated by two unprejudiced friends who kindly offered themselves for experiment. The blue light has a most distinctly calming influence, a desire to close the eyes and sleep is experienced, and after some minutes, sensibility to pain is lessened; for instance,

the difference between light pressure, made with the tip of the little finger, and a needle prick could not easily be detected, and surgical needles could be pushed into the face, lips, gums and arms, and blood drawn thereby, without actual pain being felt, unless a still deeper pressure were exerted. The analgesia seemed to be much more complete over the area of distribution of the cranial nerves, than over the extremities. When the arm, for example, was pricked a first time, pain was felt only upon deep pressure with the needle, but if the part be immediately again pricked in the same degree, the prick is more painful. The first stimulus seems to wake the sensorium which was becoming somnolent, and in consequence a quickly following second stimulus is more readily perceived. On the other hand, over the area of distribution of the cranial nerves, a succession of mild stimuli or a single much stronger stimulus is required to recall full sensibility. These experiments were by no means exhaustive, and could be usefully extended in many directions; but they warranted the application of the method to those cases where such a small operation as, for instance, the extraction of a tooth was necessary. In these cases the results have been variable, and an effort has been made to discover to what cause the variability was due. In some a very satisfactory analgesia was produced, accompanied by a distinct tendency to somnolence, with closed eyes and impaired consciousness after only two and a half minutes' application of the blue light rays; while in others little or no effect was observed after a much longer period. In the best cases the analgesia was fleeting, that is to say, it lasted only long enough for three or four rapid extractions. The exigencies of hospital practice have prevented the application of the rays for extended periods, but my experience has led me to believe that in the most suitable cases it would be possible to induce sleep, and a very complete condition of analgesia if the patient could be subjected to the rays for a sufficient time. I believe the presence of a blue lamp suitably placed might give satisfactory results in the treatment of insomnia, owing to its calming influence, and I have tried it with some benefit in one case. Similarly in the restlessness of infants suffering from mild illness, and in asylums in cases of mania, it is conceivable that blue light rays might be of value. This view is supported by the fact that red

light has been found to have a beneficial influence upon smallpox, as it is inimical to the vitality of the germs of that disease.

With regard to the variability in the results, it is certain that those cases which are very excited, nervous and fearful, and who do not obey instructions, who do not keep their eyes fixed upon the lamp, but constantly blink, and remain alert to everything in their surroundings, are hopeless subjects for the method. A large proportion of my failures were patients of this class, who had some knowledge or personal experience of what gas anesthesia was like, who could not believe that they could lose sensibility to pain, without losing consciousness also. Others, again, apparently followed my directions, and yet the result was unsatisfactory. This seemed possibly due to the very crude form of apparatus, by means of which it was impossible to keep the light immovably fixed at an unvarying distance from the patient's eyes, or at the correct focal angle; that is to say, at one moment the light might be projected properly into the eyes—and this is necessary to success—while at another moment it might not enter the eyes at all. Another disadvantage was that very little ventilation is possible inside the thick veil, which it is necessary to use to exclude all white light, and consequently the patient has to rebreathe already vitiated air. This air also becomes greatly heated by the lamp, is thus unpleasant for the patient, and necessitates his blinking or closing his eyes, to prevent the conjunctiva becoming too dry. It is therefore easy to take erroneously this closing of the eyes as a sign that the patient is ready for operation. In order to avoid this undue heat, this rebreathing vitiated air, and this uncertainty that the light was properly directed into the eyes, I had a special apparatus made.

The apparatus consisted of two 8-volt flat blue lamps with the filament placed at right angles to the stem of the lamp. These lamps could be used with current from a small storage battery, or with a resistance lamp in circuit from the house electric supply, and were made to give but very little heat. They were enclosed in a tin arrangement—similar to a stereoscope apparatus—fitting over the patient's nose and around his orbits, so that the mouth and nose were exposed, and he could breathe fresh air, all daylight being at the same time excluded. The lamps were brought close to the patient's eyes, each lamp being separated from each eye by a lens. A window of blue glass was inserted for purposes of observation.

Unhappily my results were no better with this apparatus, and I attributed this to the lights not being sufficiently intense. I therefore had a similar apparatus made to hold one 16-candle power lamp, but of sufficient length to prevent the lamp scorching the face, a sheet of plate glass also being interposed to screen the heat rays from the eyes. Results from this third apparatus have still been variable. In some instances two or three extractions would be performed without much discomfort to the patient, but in others there was apparently no loss of sensation; in these latter cases the operation was immediately stopped if pain was experienced. The greatest difficulty the anesthetist has in using the method is to know if, and when, analgesia is satisfactorily induced. My experience leads me to be now guided by the two following signs: Dilatation of the pupils and closing of the lids. Dilatation of the pupils was observed in most of the successful cases, when the patients had kept the eyes open and steadily fixed upon the lamp during application of the rays. This dilatation persisted for the first few moments of the operation, in spite of the patient being exposed to the full daylight from a window opposite the chair. When the pupils again contract the operation should be stopped. In some of the successful cases, however, the eyelids close after a few minutes' application of the rays, and there is then no satisfactory means of ascertaining whether or not the patient is insensitive to pain; consequently the only available guide is the duration of the administration; this is, of course, unscientific and inaccurate.

The best results are obtained with patients of a calm temperament, who are not highly nervous and fearful, who have sufficient intelligence to understand that analgesia can be present without loss of consciousness, and who can and do carry out the anesthetist's instructions. The operating room and its environment should be as quiet as possible, no conversation should be permitted on the part of any one present. The confidence of the patient is essential, for which reason those who have listened to alarming stories about operations and anesthetics, and have been worked up to the highest pitch of fear and excitement, are unsuitable subjects for the method.

Considerations of space prohibit the publication of a detailed list of cases here, but the fact that analgesia, under certain conditions, can be produced by the light rays at the violet end of the spectrum is proved by the following facts:

That one woman who suffered from heart disease and had previously taken gas badly at the hands of another anesthetist, and been ill afterwards, and who was an unsuitable subject for gas, was so satisfied with the analgesic powers of blue light rays, that after her first experience of this method she returned on two successive occasions in order to have the mouth cleared before having a denture fitted.

That one man after the application of the rays having felt no pain during the extraction of one molar, returned when bleeding had ceased to have two others removed by the same agency.

That as many as nine roots have been extracted without pain under the influence of the rays; that patients who have had both nitrous oxid gas and blue light have expressed their preference for the latter; and that others who have had teeth extracted while under the influence of blue rays, and also without any anesthetic at all, have asserted that they preferred the former experience.

Conclusions.—Analgesia certainly may be produced by means of blue light rays applied in a suitable manner, but the field of practical utility for this method is very limited. Owing to the length of time during which it is necessary to apply the rays, and owing to the brief duration of the analgesia so produced, the method is quite unsuitable in hospital practice, and better results can be attained in a shorter time and with greater certainty by means of nitrous oxid gas.

Blue light rays might usefully be employed in those rare cases in which a general anesthetic is contraindicated; but the guides as to their effect upon the patient are too uncertain to enable me to recommend this method with confidence. I am unable to account for the results produced by the blue light rays, when applied in the manner I have described. Some say it is "hypnotism," but what is that?, they merely beg the question. Against the theory of hypnotism is the evidence of Prof. Redard, who was unable to produce with yellow, red and green light the same effects as those produced by blue. His explanation is that the actinic rays penetrate the eye, and acting through the optic nerve produce some chemical change in the central nervous system. At present there is no proof of this, but the experiments of Lord Avebury show that light rays from the violet end of the spectrum do have a very distinct influence upon insects, and it is therefore at least con-

ceivable that they may also affect more highly organized, and therefore more sensitive matter. The good results obtained when the patient's head is enveloped in a blue veil, with the lamp and reflector inside, may in part be due to the narcotic effect of the vitiated air which he has to rebreathe for some minutes.

I look upon this method as one merely of scientific interest, at present; but I believe there is more in it than would appear at first sight. I regret that the limitations of my scientific training and opportunities prohibit my working as far with it as I could wish, for there appears to be a reasonable probability that if a suitable lamp were made which emitted none but blue, violet and ultra-violet rays, better and more certain results would be obtained. Then, perhaps, if a psychologist were to interest himself in the effects produced by the application of these rays, some instructive if not valuable phenomena might be discovered; for so long as the words of Shakespeare live, some humble and enquiring mind may by them be stimulated to search and find some of the things in heaven and earth which to-day are undreamed of in our philosophy. —*Brit. Dental Jnl.*

PUTRESCENT PULPS AND THEIR TREATMENT. By Algy F. Strange, D.D.S., Litchfield, Ill. Read before the Central Illinois Dental Society. The causes of putrescent pulps I have divided into four classes:

1. Mechanical. 2. Thermal. 3. Infection through caries. 4. Lack of nutrition.

(1) Under "Mechanical" causes might be mentioned blows, biting threads, too rapid movement of teeth in regulating, etc.

(2) "Thermal." Usually fillings which too closely approximate the pulp without sufficient intermediate lining. (Although I have known smokers to destroy pulps in seemingly sound teeth, from the heat of cigars and pipe stems.)

(3) The most common cause is from decay, the pulp through exposure being subject to irritation, inflammation, infection, hypertrophy, suppuration and death.

(4) In a few cases we find the pulp dead, without any apparent cause. In these cases the health of the patient is generally below par, the nutrient function impaired and upon closer examination we may find calcific deposits in the pulp chamber, or in the pulp itself.

or upon the apex of the root, cutting off the vascular and nerve supply.

I have also noticed a few instances which I can hardly place in either class, where I have concluded that it must be due to infection entering the pulp chamber through the apical foramen.

Under a filling a putrescent pulp will cause a throbbing pain, and the tooth becomes unusually sensitive to pressure. The application of heat will cause an increase of pain (by the expansion of the gases), while cold will reduce it, the action on a vital tooth being just the reverse.

There is invariably a septic condition present at the apices of the roots, and frequently a necrotic condition of the pericementum, with possibly a disintegration of the alveolar process.

The decomposed pulps of the deciduous teeth seem to become more vile than those of the permanent ones. The breath of the little patient has an odor strong enough to permeate the air of the entire operating room. They require much more time and patience and are much more difficult to cleanse and treat than those of adults. Often it is impossible to apply the rubber dam, and owing to the restlessness of the little ones it is very hard to exclude the fluids of the mouth. In adults there is seldom an excuse for not applying the rubber dam, and the success that follows our efforts is largely due to this simple step, for we know there are numerous species of bacteria always present in the oral secretions and upon the surfaces of the moist mucous membranes of the mouth, some of which seem to be normal inhabitants, the conditions of temperature, moisture and presence of organic pabulum are so extremely favorable for their development that it seems impossible to destroy or remove them.

The important step in the treatment of such canals is the careful removal of the contents, opening up the tooth with chisels and large burs, using great care to avoid all pressure that might force contents through the apex, thus setting up an acute case of pericementitis.

The contents of the canals should be as nearly sterile as the use of antiseptics will make them before removal. This will require a great degree of care and skill. In using an antiseptic we should not employ anything of sufficient strength to be of itself a source of irritation, weakening the defensive power of the pericemental tis-

sues, nor anything that would be so coagulative as to block the escape of gases and toxins, thus forcing the septic matter through the apex of root.

Something should be applied that possesses great penetrative power. All such antiseptics should be applied in such a manner as to permit of gradual absorption into the infected area, solely through capillary attraction with an entire absence of pressure.

For this I should recommend the use of formalin, following with an alkali, such as the peroxid of hydrogen, or sodium dioxid. They in contact with decomposed organic matter will cause a chemical reaction, with quite a noticeable effervescence, leaving the debris in a condition that can be easily washed away.

After this careful cleansing the canal should be thoroughly dehydrated, by means of alcohol and a plentiful supply of as warm air as the patient will permit. The mouths of the tubuli are thus opened so that the fibrillae can be more easily acted upon. We are now ready for our antiseptic dressing. For this I have for some time been using, with gratifying results, oxpara. I realize that I am open for more or less ridicule and criticism in using and recommending a proprietary preparation. But I find it more successful than the remedies taught us in college and believe the results more uniform than we will obtain when we use prescriptions as compounded by our local druggists, out of drugs which have probably been in stock for several years.

Oxpara is a combination of formaldehyd, thymol, burnt alum and creasote, a powder and a liquid which should be mixed to a creamy consistency, and inserted upon a few threads of antiseptic cotton or bibulous paper. Upon the return of the patient after the lapse of several days, if there has been no pain, the dressing may be removed, dropping it into a little peroxid of hydrogen, and if there is no effervescence the canals may be filled with safety.

As a canal filling for this class of teeth I have found nothing better than oxpara in combination with carbonized cotton, which is a good quality of absorbent cotton, saturated with boric acid, placed in an airtight retort, which is gradually raised to a white heat, the cotton being reduced to carbon. This should be held over a bunsen flame and thoroughly sterilized before using. When dry it readily crumbles and is difficult to manipulate, but in combination with oxpara it works easily and very satisfactorily.

If for any reason it should become necessary to remove the canal filling all that is necessary is to moisten it with the liquid that accompanies the oxpara, which will in a few moments so soften it that it can be removed with ease. A guttapercha point may be inserted in combination with the oxpara and carbonized cotton, when the canal is sufficiently large to permit.

My idea of an ideal root canal filling is something like this:

1. Compatible to tooth structure. 2. Indestructible. 3. Easy to insert. 4. Easy to remove.

While this may not fill the requirements fully, it is as near the ideal as anything I have ever tried.

There are occasionally found putrescent pulps, which are extremely sensitive to the touch of a broach, where the previously described treatment would cause more or less pain, owing to the mummifying agents in the combination. We find arsenic of little service in further destroying the life of the pulp, the blood vessels being engorged and the circulation impaired to such an extent that it is not properly absorbed. Nor can we use pressure anesthesia for the same reason and through fear of forcing septic material through the apex of root. For such cases I employ a mixture of tannic acid and glycerin, which will in a few days so toughen and tan the pulp that it may be removed with little or no pain. The after-treatment would be identical to previous description, until in a condition to be filled or crowned, as the case may require.—*Dental Review.*

IS A PERFECT FILLING POSSIBLE? By G. S. Junkerman, M.D., D.D.S., Cincinnati, Ohio. Dental surgeons who have attained through practice and experience a proficiency in the insertion of fillings for the preservation of the human teeth have no doubt at times at least flattered themselves that they have inserted some fillings that are perfect or at least were perfect at the time of their completion. The elements that constitute a perfect filling seem to have left debatable ground and advanced to the exact position where all authorities have agreed that there can be no difference of opinion. With filling materials, however, the situation is different, as evidenced by the proceedings of dental societies in their discussions of the relative qualities of the different filling materials, and also as evidenced by the various text-books which

have been accepted by the profession and in whose texts varying opinions are the rule. A filling material which will make a perfect filling in the present accepted sense of that term does not necessarily make a perfect filling material, since it must also maintain that function for at least a reasonable length of time through the vicissitudes that attend the requirements in the human mouth. Therefore a reasonable and logical conclusion is reached that a perfect filling may become a very imperfect therapeutical filling and that a perfect therapeutical filling naturally is the goal sought by the dental surgeon.

Having established what we understand by a therapeutical filling, and associating with this thought the various materials used by dental surgeons, the principle of comparative therapy obtrudes itself, made manifest by the number of the materials in present use. All of these materials, however, have been selected upon a fundamental principle that their adaptation to the cavity absolutely annihilates the cavity to the exclusion or ingress of any extraneous material or egress of any confined material. This applies to matter or incipient life in a solid, liquid or gaseous state. The entrance or exit must impose no condition, and refers to permeation either through the material itself or between the material and the border of the cavity, and assuming also that perfect adaptation has been attained. Upon the basis of our filling materials fulfilling these requirements has almost the entire science of dentistry been built, for the filling of teeth constitutes the larger part of dentistry. Upon this principle we fill teeth to-day as we did fifty years ago, according ourselves the credit of saving them, with ability to select and adapt material and annihilate space with it. Our failures have been attributed by other dentists to imperfect work, and our successes have clothed us in assurance and framed our reputations for skill and ability. We have seen perfect operations fail, and, though dismayed, have remained in ignorance of the cause. Imperfect operations have surprised and astonished us by their great durability. We dislike to acknowledge that teeth are saved in spite of our operations instead of by might of them.

A few experiments have caused me to write this paper and to style it, "Is a Perfect Filling Possible?"

Experiment 1. I selected five cavities properly prepared and placed in the bottom of each a small amount of Caulk's nerve cap-

ping, which contains a considerable amount of formaldehyd. I inserted three of these fillings with soft foil, the other two with cohesive foil. I then used an emery-cloth disk with the engine to finish the fillings. The friction of the disk heated the filling and a strong odor of formaldehyd became very perceptible.

Experiment 2. I filled five cavities, previously treated with Caulk's nerve capping, with five different kinds of alloy; permitted the alloy to harden, and placed successively each tooth upon a little stove. In each case a strong odor of formaldehyd was present after the temperature of the tooth had reached only a reasonable degree of heat.

Experiment 3. I filled five cavities as in the previous experiment, only using five different kinds of cement. In each case a strong odor of formaldehyd was present upon slight heating.

Experiment 4. Guttapercha was now placed in three cavities. Heating brought forth a strong odor of formaldehyd.

With a thoroughly formaldehyd sterilization of my ideas I answered the question previously propounded—*a perfect filling is not possible.—Dental Era.*

SALIVARY LITHIASIS OF THE SUBMAXILLARY AND SUBLINGUAL GLANDS REQUIRING THE COMPLETE EXTIRPATION OF BOTH GLANDS. By Dr. A. Perrone, Naples (*Archives de Stomatologie*). The author describes the interesting investigations of Professor Berger of Paris on the pathohistology of lithiasis of the salivary glands. The author found that in cases of calcareous deposits within glandular tissue the parenchyma of the organ undergoes sclerotic degeneration, the process taking place through the agency of lymphatic cells, and the resulting changes having the characteristics of an infectious neoplasm. Berger is of the opinion that the calcareous deposition is followed by an infectious process. He recommends that in advanced cases the affected gland be completely extirpated, inasmuch as the sclerotic changes render the organ absolutely powerless to carry out its physiological function.

Dr. Perrone then describes the case of a man aged sixty, who was admitted to the hospital suffering from a tumor in the right submaxillary region, beneath the tongue. It gave rise to acute pain and interfered with both deglutition and phonation. At the

age of fifteen he had noticed a small swelling in the submaxillary region. It grew larger in a comparatively short time, and became eventually of such size as to cause a great deal of pain and annoyance, again interfering with mastication and speech. An operation was performed, and a calcareous deposit the size of a large pea was removed from Wharton's duct. The disturbance, with all its concomitant symptoms, recurred within two years, when a second operation was performed and a calculus of similar size to the first was removed. Since that time pain would reappear at different intervals, and cease only after the spontaneous expulsion of a number of small calculi. Shortly before his visit to the hospital the whole cycle of phenomena had reappeared, but this time of such an intensity that the patient was rather discouraged, and upon the surgeon's advice decided to submit himself to a radical operation. The entire submaxillary region was tumefied. Wharton's duct could not be explored throughout its length, owing to the presence of a number of calculi. The submaxillary gland, indurated and sclerotic, was firmly attached to the surrounding tissues, and had been evidently the seat of chronic suppurative inflammation. In view of this it was decided to extirpate the submaxillary and sublingual glands, likewise sclerotic and atrophied, together with their excretory ducts. The operation was successfully performed. The post-operative treatment consisted in frequent lavages with hydrogen dioxid solutions. The patient entirely recovered inside of twenty days. An examination of the extirpated tissues confirmed the diagnosis. Wharton's duct was literally filled with calcareous deposits. The gland had been the seat of a number of abscesses, and a bacteriological examination of a drop of the purulent matter there found revealed the presence of a streptococcus, which on inoculation under the skin of a guinea-pig at once resulted in the formation of subcutaneous abscesses, without inducing any symptoms of general toxemia. The histological examination showed a marked dilatation of the excretory canal, sclerotic degeneration of the intralobular connective tissue, and complete atrophy of the glandular parenchyma. The sclerotic degeneration is due, in the opinion of the author, not to the obstruction of the canals, but to an infectious process, as has already been demonstrated by Albarran, Strauss and Garmont, in the case of renal lithiasis.

THE INLAY PRINCIPLE AS ADAPTED TO INDIVIDUAL PORCELAIN CROWNS. By C. F. Rodolf, D.D.S., Muscoda, Wis. Read before the Southern Wisconsin Dental Association, May, 1905. It has long since been recognized that bands are not the ideal dental appliance, and that they have many features that make them undesirable.

First—They are a constant cause of inflammation as they restrict the interproximal space and afford lodgment for food to be decomposed by pathogenic organisms.

Second—They are unsightly.

Third—They fall short of one particular function, that of preventing the fracture of the root, for in order that a band be made to fit, it is necessary to make the root tapering, and as the force on the crown by the occluding tooth is to tip the crown, and as the band is part of the crown, it simply tips off the end of the root.

I firmly believe that if a band should be necessary, due to a frail or a fractured root, that it should be made entirely separate from the crown, or better yet, use an interdental band, as called by Dr. B. J. Cigrand, which is to trephine the root and place the band immediately within the cervical circumference of the root substance, cementing it on separate from the crown.

I have given this considerable study and am more convinced every day from actual results that the real trouble is not lack of a band upon the root or crown, but lack of adaptation or proper fit of the crown to the root.

The all-porcelain crown, as the Logan or Davis, should depend upon a wide base for support and a pin for retention, and if a poor fit, the cement will wear away, leaving little or nothing but the pin for support, and under these conditions we can expect a fractured root.

When the time comes that we can take a block of porcelain and with so crude an implement as a carborundum stone make proper fitting inlays, then will I believe that we can make proper fitting crowns by a like method.

It has been clinically demonstrated that cement will not wear away from a proper fitting inlay, and it was from this fact I began some years ago to try and adapt the porcelain inlay principle to individual crowns.

I prepare the root in the usual way, cutting off the crown with

burs and carborundum stones. I then use the different facers in shaping the end of the root. These are used both in the straight and right angle handpieces, and it is very handy to have one with a short shank to be used in the right angle to cut off the roots of the bicuspids and molars, also for cutting off the roots on the posterior surface. I leave the end of the tooth about the shape of the festoon of the gums, but at the same time provide a flat surface for a solid base.

Either the Davis or Logan crown is used, the former being my preference, as it has a better pin, which, however, requires baking in.

After selecting the crown to be used proceed as follows: First prepare the tooth as for a Logan crown, paying particular attention to the articulation but not being particular about the fit. Then drop on the pin end of the crown some paraffin wax and with this take an impression of the root with the crown in the position it is to occupy when finished. Next take some gold or platinum matrix metal as used in inlay work, punch a hole in the center and place over the pin, return this to the tooth and by pressure force it to place. With the aid of a burnisher force the matrix against the tooth so as to give a perfect outline, then remove and invest the pin end of the crown in an investment material so as to retain crown and matrix in exact position. Boil out the wax and fill in the space with Jenkins' prosthetic porcelain. Right here I wish to say that this is by far the best porcelain I have ever seen, as it will flow into every open space. Usually, it is necessary to make two bakes of the prosthetic porcelain in order to make up the shrinkage. The next step is to remove the investment and grind off all excess to the outline of the root, then, if necessity requires, use some of Jenkins' enamel porcelain to give the crown any particular shape or shade that may be desired to match the adjacent teeth.

In setting the crown use Jiffy cement tubes so as to carry the cement well up into the nerve canal and set the crown under pressure as would be done with an inlay, leaving all excess cement until well set, then breaking it away with an explorer, as the seam is so thin that it will come away in chunks, leaving nothing under the gums.

Some of the advantages of this method are as follows:

First—You can obtain a proper adaptation to any tooth in the mouth, including the molars and bicuspids.

Second—By use of the different enamel shades you can change all or any part of the crown to match the adjacent teeth, so that the artificial substitute will not be readily recognized.—*Dental Review.*

EARLY MAMMALS—THEIR TEETH.—In his "Animals Before Man in North America," Mr. Frederick A. Lucas, late of the United States National Museum, tells briefly here and there throughout the book many interesting things of the teeth of these far-away progenitors of animals now living, and a host of others long since extinct. In the same connection it is interesting to have attention called to the fact that, contrary to the notion common to the otherwise well-informed, mammals of those distant periods were not all built on a colossal scale: they ranged in size from Buntosaurus, sixty feet in length, down to those no larger than the household mouse of the present day. But like little potatoes in the load, or little men in a crowd, the mice-like in size went to the bottom: and not only to the bottom, but out, for their remains are few, scattered and fragmentary. Bone may be of the same quality, that of smaller animals of superior quality, but it is size that tells when it comes to passing one's record "adown the ages." Read:

"The early mammals are, with rare exceptions, known only from their teeth and imperfect jaws, and these are all we find until much later on. These specimens indicate small animals, ranging from the size of a mouse to that of a rat, and without exception flesh-eaters or insect-eaters. Some were related to the marsupials, while others were relatives of those egg-laying mammals, the echidna and platypus (recently some doubts have been cast upon the egg-laying habits of the platypus, and although eggs have been found in these animals, it is thought that they may be retained until hatching), in spite of the fact that these have no teeth. But study of the very young stages of platypus has shown that teeth are then present, and while these fail to develop, their presence indicates that teeth existed and were used by the far-distant ancestors of these animals.

"Owing to the numerous small points or tubercles on the grind-

ing teeth of these Jurassicmonotremes, the order in which they have been placed has been named Multituberculata.

MEANING OF SPECIAL MODIFICATIONS.

"The jaws of some of these little multituberculates show a very curious set of teeth; two in front, something like the lower teeth of a rat, and back of these three that seem made for cutting or shearing only. Without a knowledge of the skeleton it is difficult to say much as to the probable food and habits of the owners of these teeth, but it is likely that they fed largely on insects. The teeth of insectivorous animals are usually provided with numerous small points for holding and crushing such hard and smooth objects as beetles, and these shearing teeth may have served a similar purpose. Special modifications have some relation to special habits, or to some particular kind of food and peculiar manner of getting it. One of the best instances of this is to be found in that remarkable lemur, the aye-aye, in which the jaws are very powerful and the front teeth like those of a rodent, while the second finger is wonderfully long and slender. The meaning of these peculiarities is clear when we know that the aye-aye feeds largely on wood-boring grubs. The sharp front teeth cut readily into the bark and wood in which the grubs dwell, and the long finger is used to coax them out of their burrows. So, if we only knew the food of some of these old animals, the reason for the strange shape of their teeth might be evident.

REPTILE-LIKE.

"A peculiar feature of some of the early marsupials, the polyprotodonts, is the number of their teeth. Nowadays no mammal, save the porpoise, has more than forty-four teeth; but Dromatherium possesses fifty-six, and Stylacodon no fewer than sixty-eight. This abundance of teeth is a slight suggestion of affinity with reptiles, in which, it may be remembered, teeth are numerous, but of one pattern in any given species. And it may be recollected, too, that in speaking of worms and trilobites, it was noted that mere repetition or multiplication of similar parts is no real increase in complexity of structure, although it may appear so at first sight."—*Dental O. and Lab.*

The Dental Digest.

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Where All Communications Should be Addressed.

Editorial.

OUR DENTAL BROTHERS.

Never was it more truly said that "One touch of nature makes the whole world kin" than now, when the old world is being devastated by Vesuvius and the new by earthquake and fire, and the two meet on common ground; the loss of thousands slain, property destroyed, homes vanished, and the suffering which follows.

Well is it for mankind and the race that with the passing of the centuries the stream of human love and sympathy has broadened and deepened and man no longer asks in the face of poverty and suffering, "Am I my brother's keeper?" While Vesuvius was still rocking and dealing death in all directions, the American people were working in clubs and churches, in organizations of various kinds for the sufferers in Italy. Before the last shock of the earthquake in California had subsided the calamity was known in all the great centers of the old world and like an electric current running around the world quickly came the question from czar, from emperor and king, from sister republics, "What can we do for you?" Our own country has responded with a generosity which is characteristic of it, and for the present the refugees and sufferers are being cared for and their wants met. But, more than present help is needed. What of the future? We shall speak more specifically of our own profession.

The dentists will find themselves without homes, without offices, without instruments, without appliances or equipment and at first

with little work. Substantial aid will be needed to put dentists on their feet again, and where should this aid come from if not from the profession? We have both numbers and influence and a general rally should be made all along the line. The state societies, the local societies, all dental organizations and dental dealers should respond immediately. By a concerted action if each practitioner gives only a small amount a sum can be raised which will greatly relieve those of our profession who have suffered so keenly, and will enable many to begin over again who otherwise could not without our brotherly sympathy and material aid. California has a good State Board which will distribute this money wisely and judiciously. Chicago and Illinois are already moving and we feel sure that no added word of ours is needed to impress upon *every* practitioner the importance of each one doing his part.

Notices.

MAINE DENTAL SOCIETY.

The Maine Dental Society will hold its forty-first annual meeting at the Kinee House, Moosehead Lake, Maine, July 17, 18, 19, 1906.

H. A. KELLEY, Secy., Portland, Me.

NORTH CAROLINA DENTAL SOCIETY.

The thirty-second annual meeting of the North Carolina Dental Society will be held at High Point, N. C., June 20 to 23, 1906.

J. C. WATKINS, Secretary,
Winston-Salem, N. C.

SOUTH DAKOTA STATE DENTAL SOCIETY.

The South Dakota State Dental Society will hold its next regular meeting June 12, 13 and 14, 1906, in Vermilion, S. D.

W. F. PRICE, Secy.,
Vermilion, S. D.

DISTRICT DENTAL SOCIETY OF CENTRAL ILLINOIS.

At the last meeting of the District Dental Society of Central Illinois, held in Pana, March 6, 1906, the following officers were elected: President, J. D. Reed, Pana; Vice-president, C. H. West, Farina; Secretary, W. M. Shaw, Taylorville; Treasurer, T. T. Baker, Litchfield; Librarian, E. P. Ames, Shelbyville.

ALBUQUERQUE (N. M.) DENTAL SOCIETY.

The Albuquerque Dental Society was organized Feb. 16, 1906, with the following officers: President, Dr. MacBeth; Vice-president, Dr. Chamberlin; Secretary, Dr. Ervin.

LOUISIANA STATE DENTAL SOCIETY.

The annual meeting of the Louisiana State Dental Society will be held at New Orleans, June 1-2, 1906. For further information address the secretary, Dr. A. L. Plough, 1039 Canal St., New Orleans.

ODONTOLOGICAL SOCIETY OF WESTERN PENNSYLVANIA.

At the meeting of the Odontological Society of Western Pennsylvania, held at Pittsburg, April 4, 1906, the following officers were elected: President, W. H. Haines, Pittsburg; Secretary, V. M. Lear, Mt. Pleasant.

MEMPHIS (TENN.) DENTAL SOCIETY.

The Memphis Dental Society met March 15, 1906, and elected the following officers: President, C. J. Washington; Vice-president, W. M. Slack; Secretary and Treasurer, Eugene Johnson, Collierville.

BOISE (IDAHO) ODONTOGRAPHIC SOCIETY.

The Boise Odontographic Society was organized March 8, 1906, and the following officers were elected: President, A. W. Cate; Vice-president, W. C. Minier; Secretary and Treasurer, R. J. Cruse.

PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of Pennsylvania will conduct examinations in Philadelphia and Pittsburg, June 5-8, 1906. For papers and particulars address

N. C. SCHAEFFER, Secy. Dental Council.
Harrisburg, Pa.

CHICKASAW (I. T.) DENTAL SOCIETY.

The Chickasaw Dental Society was organized at Ardmore, March 31, 1906, and the following officers were elected: President, Dr. Abernethy, Ardmore; Secretary, Dr. Greer, Madill. The next session will be held at Sulphur, June 17.

MIAMI VALLEY (O.) DENTAL SOCIETY.

The Miami Valley Dental Society was organized April 2, 1906, with the following officers: President, P. T. Bollinger; Vice-president, E. P. Tizzard; Recording Secretary, W. L. Wright; Treasurer, L. C. Adams; Corresponding Secretary, M. C. Faul.

KNOX COUNTY (ILL.) DENTAL SOCIETY.

The Knox County Dental Society met March 13, 1906, at Galesburg, and elected the folowing officers: President, F. C. Lander, Knoxville; Vice-president, M. W. Olson, Galesburg; Secretary, J. Jay Hammond; Treasurer, O. P. Mabee; Librarian, G. H. Smith.

CHATTANOOGA (TENN.) DENTAL SOCIETY.

The Chattanooga Dental Society was organized March 13, 1906, and the following officers were elected: President, R. S. Henry; Vice-president, C. H. Smith; Treasurer, F. W. Meacham; Secretary, B. C. Roper; Chairman of Executive Committee, V. Taylor.

CENTRAL NEBRASKA DENTAL SOCIETY.

The Central Nebraska Dental Society was organized at York, March 15, 1906, with the following officers: President, W. V. Sharp, Stromsburg; Vice-president, George Gallagher, Utica; Secretary, Homer R. Hatfield, York. The next session will be held in York, April 16.

EVANSVLLE (IND.) DENTAL SOCIETY.

At the meeting of the Evansville Dental Society, April 4, 1906, the following officers were elected: President, Chas. C. George; Vice-president, John Zubrod; Secretary, A. R. Reitz; Treasurer, W. J. Hooker.

FARGO DISTRICT (N. D.) DENTAL SOCIETY.

The Fargo District Dental Society held its annual meeting March 26, 1906, and elected the following officers: President, L. C. Davenport; Vice-president, J. L. Graves; Secretary, F. K. Weible; Treasurer, C. L. Rose; Executive Committee, F. H. Bricker, Ed. W. Christiansen and W. E. Heller.

LAURENS COUNTY (S. C.) DENTAL SOCIETY.

At a meeting of the dentists of the county, held at Laurens, March 6, 1906, the Laurens County Dental Society was organized and the following officers were elected: President, H. C. Wofford, Clinton; Vice-president, G. C. Albright, Laurens; Secretary and Treasurer, Clifton Jones, Laurens.

NEBRASKA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Nebraska State Board of Dental Examiners will be held in Lincoln, Neb., May 29, 30 and 31. The meeting is held for the examination of applicants for a permanent license to practice dentistry in the State of Nebraska. All inquiries relating to the meeting should be addressed to

C. F. LADD, Secy. State Dental Board,
1241 O St., Lincoln, Neb.

NATIONAL ASSOCIATION OF DENTAL FRATERNITY.

The annual meeting of the National Association of Dental Fraternity will be held in Atlanta, Ga., commencing at 2 p. m., Friday, Sept. 14, 1906. The Executive Committee will meet at 10 a. m. on the same day.

H. B. TILESTON, Chairman Ex. Com.
R. M. SANGER, Secy, Ex. Com.
East Orange, N. J.

CENTRAL MICHIGAN DENTAL SOCIETY.

At the fifth annual meeting of the Central Michigan Dental Society, held at Lansing, Feb. 23, 1906, the following officers were elected: President, O. C. Carr, Lansing; Vice-president, C. E. Hathaway, Ionia; Secretary and Treasurer, H. N. Moore, Lansing; Executive Committee, P. F. Hines, Lake Odessa; B. S. Sutherland, Owosso; C. B. Blackmar, Jackson.

INTERSTATE DENTAL FRATERNITY.

The annual meeting of the Interstate Dental Fraternity will be held at the New Kimball House, Atlanta, Ga., on Monday, Sept. 17, 1906.

The meeting and banquet will be in charge of Dr. Frank Holland, the Vice-president for Georgia. Dr. Holland's well established reputation as a host is sufficient guarantee for a royal good time for all the fraternity who can arrange to get there. Do not miss it.

R. M. SANGER, National Secretary.

OHIO STATE BOARD OF DENTAL EXAMINERS.

The regular semi-annual meeting of the Board of Dental Examiners of the State of Ohio will be held in Columbus, June 26, 27 and 28, 1906.

Only graduates are eligible for examination.

Application, accompanied by fee ($20.00), should be filed with the secretary by June 16. For further information address

H. C. BROWN, Secy.,
185 East State St., Columbus, O.

VERMONT BOARD OF DENTAL EXAMINERS.

The next meeting of the Vermont Board of Dental Examiners, for the examination of candidates to practice dentistry, will be held at Montpelier, July 10, 11, and 12, 1906, commencing at 2 o'clock p. m. on the 10th. Headquarters will be at the Pavilion Hotel. Application, together with the fee of $25.00, must positively be in the hands of the secretary before July 1. Candidates for third examination must notify the secretary before July 1, enclosing the fee, $5.00. For application and other blanks required, including information, apply to

GEO. F. CHENEY, Secy.,
St. Johnsbury, Vt.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The Minnesota State Board of Dental Examiners will hold a special meeting on June 14, 15 and 16 at the Dental Department of the State University in Minneapolis, Minn., for the purpose of examining those who desire a license in Minnesota.

All applications must be in by noon of June 14.

For further information address

DR. GEO. S. TODD, Secy.,
Lake City, Minn.

CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

At the twenty-sixth annual meeting of the Central Dental Association of Northern New Jersey, held at Manhattan, Feb. 20, 1906, the following officers were elected: President, Joseph S. Vinson; Vice-president, H. Parker Marshall; Treasurer, Chas. A. Meeker; Secretary, Chas. E. Smith; Executive Committee, Chas. A. Hane, Jersey City; W. Moore Gould, Newark; R. C. Fowler, Harrison; S. C. G. Watkins, Montclair; Edwin W. Harlan, Jersey City.

EAST MIDDLESEX (MASS.) DENTAL ASSOCIATION.

The dentists of Malden, Melrose, Medford and Everett met Feb. 21, 1906, and organized the East Middlesex Dental Association, and elected the following officers: President, C. M. Proctor, Malden; 1st Vice-president, A. H. St. Clair Chase, Everett; 2d Vice-president, W. S. McPherson, Medford; Secretary, F. A. Perry, Malden; Librarian, R. E. Wells, Malden; Executive Committee, Dr. Harvey, Everett; Dr. Sanderson, Melrose; Dr. O'Donnell, Medford.

ALUMNI SOCIETY OF THE PHILADELPHIA DENTAL COLLEGE.

A grand rally of the graduates of the P. D. C. will be held at Philadelphia. Alumni Day falls upon Thursday, May 31, this year, and will be celebrated in a highly interesting manner by clinics and business meeting in the college at Eighteenth and Buttonwood streets, and a banquet or reception in the evening. Dr. Wheeler of New York will read the annual address. Twenty-five hundred copies of the *Alumni Journal* will be mailed to the graduates of the Philadelphia Dental College.

A. IRWIN, Secy.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The Iowa State Board of Dental Examiners will hold its next meeting at Iowa City, beginning at 9 a. m. Thursday, June 14.

Practical examination will be held in Operative Dentistry, and written examination in the following branches: Anatomy, Physiology, Chemistry, Pathology, Therapeutics, Materia Medica, Histology, Hygiene, Bacteriology.

Prosthetic Dentistry, Oral Surgery, Metallurgy, Operative Dentistry, Orthodontia, and Jurisprudence.

All applications for examination must be filed with the secretary by June 5.

For application blanks and further information apply to

E. D. BROWER, Secy.,
LeMars, Iowa.

FLORIDA STATE BOARD OF DENTAL EXAMINERS.

The annual meeting of the Florida State Board of Dental Examiners, for the examination of applicants for license, will be held at Atlantic Beach, May 14, 1906, at 9 a. m. All applicants for license to practice dentistry in Florida must exhibit diplomas from reputable dental colleges. Absolutely no interchange of licenses with states. Practical work in operative and prosthetic dentistry. Student applicants required to furnish instruments. For further particulars address

W. G. MASON, Secy.,
Tampa, Fla.

SOUTHERN DENTAL SOCIETY OF NEW JERSEY.

The Southern Dental Society of New Jersey held its annual meeting Jan. 17, 1906, at Camden, and elected the following officers: President, Dr. A. B. Dewees, Camden; Vice-president, Dr. A. K. Wood, Camden; Corresponding Secretary, Dr. Wm. H. Gelston, East Side; Librarian, Dr. J. G. Halsey, Swedesboro; Executive Committee—Dr. A. Irwin, Chairman; Dr. Walter W. Crate, Dr. J. G. Halsey, Dr. C. P. Tuttle, Dr. W. A. Jaquette, Dr. S. I. Callahan; Membership Committee—Dr Stanley Ironside, Chairman; Dr. W. A. Jaquette, Dr. Robert Purvis.

MASSACHUSETTS DENTAL SOCIETY.

At the forty-second annual meeting of the Massachusetts State Dental Society, to be held in Boston, June 6, 7 and 8, jointly with that of the Section on Stomatology, American Medical Association, the following papers will be read:

Dr. G. V. I. Brown, Milwaukee, Wis., "Clinical Pathology Studies of Asymmetrical, Facial, Maxillary, and Dental Deevlopment."

Dr. M. H. Cryer, Philadelphia, Pa., "Some of the Factors that Modify Jaws and Other Parts of the Face."

Dr. Vida A. Latham, Chicago, Ill., subject to be announced.

Dr. James C. Monaghan, Washington, D. C., "This, the Land of Unlimited Opportunities for All, and the Duty of the Dentist in these Days of Doubt."

Dr. Wm. H. Potter, Boston, Mass., "The Necessity for an Endowment for Dental Schools."

Dr. Murdock C. Smith, Lynn, Mass., "Cysts of the Jaws."

Dr. Eugene S. Talbot, Chicago, Ill., "Dental Education."

Dr. Herbert L. Wheeler, New York, N. Y., "The Need of an Independent Journal in the Dental Profession."

W. E. BOARDMAN, Chairman Essay Com.,
Boston, Mass.

KENTUCKY STATE BOARD OF DENTAL EXAMINERS.

The Kentucky State Board of Dental Examiners will hold their next meeting at Louisville, June 5.

All applicants will be examined in regular college branches.

Practical work, gold and amalgam.

One piece of metal work, materials, small instruments, an engine, must be furnished by the candidate.

A fee of ($20.00) twenty dollars will be charged. For further information address

J. RICHARD WALLACE, President, Louisville.

CONNECTICUT DENTAL COMMISSION.

The Dental Commissioners of the State of Connecticut hereby give notice that they will meet at Hartford, June 27, 28, and 29, 1906, to examine applicants for license to practice dentistry, and for the transaction of any other business proper to come before said meeting.

All applicants should apply to the recorder for proper blanks and rules for conducting the examination. Application blanks must be filled in and sworn to and, with fee, filed with the recorder on or before June 20, 1906.

The annual meeting of the Commission, for the election of officers and to transact any business proper to come before said meeting, will be held at 2 o'clock p. m., July 14, 1906.

By order of Commission.

GILBERT M. GRISWOLD, Recorder,
783 Main St., Hartford, Conn.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held in Chicago at the Northwestern University Dental School, s. e. corner Lake and Dearborn streets, beginning Monday, June 4, at 9 a. m.

Candidates will be furnished with proper blanks and such other information as is necessary upon application to the secretary. All applications must be filed with the secretary five days prior to the date of examination. The examination fee is twenty dollars ($20.00), with the additional fee of five dollars ($5.00) for a license.

Address all communications to

J. G. REID, Secy.,
1204 Trude Bldg., Chicago.

KANSAS CITY (MO.) DENTAL CLINIC.

The Kansas City (Mo.) Dental Society has perfected arrangements for the organization of a monster dental clinic, to be held in that city, Feb. 22 and 23, 1907. The detailed plans and arrangements will be announced in succeeding issues as they are perfected. Dr. J. P. Root is president of the Central Committee and the following have been elected as chairmen of sub-committees:

J. D. Patterson.....Essays
F. G. Worthley.....Clinics
T. E. Purcell.....Exhibits
M. C. Carpenter.....Program
R. M. Siebel.....Arrangements
D. J. McMillen.....Reception
C. L. Hungerford.....Smoker
C. L. Van Fossen.....Finance
J. W. Hull.....Publication
F. W. Franklin.....Railroads

JAMES W. HULL,
Altman Bldg., Kansas City, Mo.

LATEST DENTAL PATENTS.

812,895. Cutter for cutting toothpicks from veneer strips, George P. Stanley, Dixfield, Maine.

812,976. Dental tools for removing crown-pins, George T. Carpenter, Chicago, Ill.

813,178. Slip-joint connection for dental handpieces, Edward E. Smith and H. F. Jones, Philadelphia, Pa.

813,348. Grinding stone and disk employed in mechanical and operative dentistry, Harry Sanford-Burton, Oxford, England.

814,056. Dental-matrix retainer, Closson M. Leffingwell, Little Falls, Minn.

814,235. Toothbrush, Moses Rosenstein, Medford, Mass.

814,925. Gold-catcher for fountain spittoons, Frank E. Webster, Buffalo, N. Y.

815,040. Instrument for stopping teeth, Percy F. Rutterford, London, Eng.

815,041. Instrument for stopping teeth, Percy F. Rutterford, London, Eng.

815,153. Dental tool, Charles P. Fritz, Philadelphia, Pa.

News Summary.

J. MCDAVITT, a dentist of Clarksville, Tenn., died March 6, 1906.

C. A. FULLER, a dentist of Watertown, N. Y., died March 17, 1906.

C. F. HOUSTON, a dentist of Jacksonville, Fla., died Feb. 20, 1906.

E. K. W. CORNELL, 82 years old, a dentist of Elgin, Ill., died March 2, 1906.

TUNIS R. HANE, 37 years old, a dentist of Columbus, O., died March 4, 1906.

S. MUNSON HART, 70 years old, a dentist of Marietta, O., died March 31, 1906.

JOHN L. LOCKE, 84 years old, a dentist of Lewiston, Pa., died March 28, 1906.

HARRY B. ORR, 50 years old, a dentist of Pittsburg, Pa., died March 29, 1906.

J. M. BLYTHE, a dentist of Decatur, Ill., died March 10, 1906, from cancer.

EDWARD S. PEARSALL, a dentist of Saratoga Springs, N. Y., died March 24, 1906.

E. D. VOORHEES, 32 years old, a dentist of El Paso, Tex., died March 15, 1906.

T. FRANK O'KEEFE, 25 years old, a dentist of Syracuse, N. Y., died Feb. 21, 1906.

WILLIAM P. LEAVITT, 81 years old, a dentist of Dorchester, Mass., died Feb. 15, 1906.

ELLIS DIXON, 32 years old, a dentist of Frankfort, Ind., committed suicide March 14, 1906.

W. R. TURK, 56 years of age, a dentist of Newport, Va., died March 30, 1906, of paralysis.

HORACE FRENCH BRYANT, a dentist of Boone, Ia., died March 9, 1906, from typhoid fever.

JOSEPH L. PERKINS, a dentist of St. Johnsbury, Vt., died March 23, 1906, from heart disease.

THADDEUS HAYNIE, 69 years old, a dentist of Dallas, Tex., died Feb. 15, 1906, of heart failure.

THOMAS BURGH, 70 years old, a dentist of New York, died March 14, 1906, of heart trouble.

L. L. SMITH, 40 years old, a dentist of Seattle, Wash., died March 15, 1906, of locomotor ataxia.

JOHN D. PURCELL, 39 years old, a dentist of Madison, Wis., died March 23, 1906, from pneumonia.

E. H. GOTHARD, 59 years old, a dentist of Charleston, Wash., died March 5, 1906, after a long illness.

CHARLES M. PEIRCE, 73 years old, a dentist of Portland, Me., died Feb. 17, 1906, after a long illness.

ADOLPHUS E. FONES, 64 years old, a dentist of Bridgeport, Conn., died March 9, 1906, of kidney trouble.

OTIS M. RICE, a dentist of Chelsea, Vt., in active practice for thirty years, died suddenly March 18, 1906.

CHARLOTTE TUCKER, 83 years old, formerly a dentist of Otsego, Mich., died March 8, 1906, after a short illness.

DIVORCES.—Mrs. Anna E. Behringer was granted a divorce from Dr. Samuel H. Behringer, a dentist of Chicago, March 28.—Dr Luella Cool Walker obtained a divorce from Dr. Chas. H. Walker, a dentist of Oakland, Cal., March 23.

SORENESS OF GINGIVÆ AFTER CROWN SETTING.—If the soreness is persistent slip over the tooth a ring cut from rubber tubing. Remove carefully the next day and spray the parts with tepid water and you will in all prob-

ability find a minute nodule of cement. Remove and the gum will rapidly heal.—B. J. CIGRAND, *Dental Review.*

W. L. SKIDMORE, 45 years old, a dentist of Moline, Ill., and vice-president of the Illinois State Dental Society, died Feb. 23, 1906.

W. W. DUGAN, a dentist of Kenton, O., died March 13, 1906. He had practised his profession at Clyde, O., for twenty-three years.

DENTIST MURDERER AND SUICIDE.—Henry L. Whitbeck, a dentist of Buffalo, N. Y., killed his wife and then himself March 4, 1906. Both had been ill for some time.

NOT DENTAL RUBBER.—According to the Bible, Lot's wife was the only living person to undergo two distinct chemical changes. First she turned to "rubber," then she turned to salt.—*Drug Topics.*

TO KEEP FLASKS CLEAN.—Put a teaspoonful of bicarbonate of soda in vulcanizer while vulcanizing, and the flask will come out clean and will not stain the hands.—J. M. MURPHY, Temple, Texas.

IDENTIFIED BY TEETH MARKS.—Traced by the impression of his teeth in a half-eaten apple left in a house in Basle, Switzerland, a burglar confessed and was sentenced, according to newspaper report.

"WE HAVEN'T TIME."—It is surprising how much time we may find we have and the things we may accomplish if we but get busy and utilize the spare moments.—F. C. BRUSH, *International Dental Journal.*

SALIVA-EJECTOR TUBES.—I have had decided success in keeping my glass tubes for saliva ejection clean by permitting them to stand in a weak solution of sulphuric acid.—W. G. EBERSOLE, *The Dentist's Magazine.*

TO SHARPEN OTTOLENGUI FACERS.—By running the facer backward in the engine handpiece and holding a crocus or fine emery disk against the blades it can be quickly brought to a keen edge.—*Tri-State Journal.*

IF WE BUT KNEW.—Lives of rich men, if we knew them,
Might not seem so blamed sublime;
Oft the stomachs fastened to them
Keep them doping all the time.

CONTROLLING HEMORRHAGE FROM PULP REMOVAL.—For controlling the hemorrhage following pulp removal or when placing porcelain crowns, I know of nothing which equals Oxpara liquid.—G. M. KINSEY, *Summary.*

Completeness comes only through incompleteness, triumph through failure, and good through evil.

SIGHT RESTORED AFTER TOOTH EXTRACTION.—A man at Wooster, O., who had been partially blind for eighteen years, discovered half an hour after one of his teeth had been extracted that he could see as well with the disabled optic as with the other.

PREPARING SENSITIVE CAVITIES.—The first application of the bur can be made absolutely painless in the most highly sensitive cavity by simply taking ethyl chlorid on the bur point and bringing it quickly into contact with the tooth.—J. M. GALE, *British Dental Journal.*

To Protect Inlays from Moisture After Setting.—Cover the inlay with the surplus cement and firmly press a piece of tin foil over the whole; this will adhere for hours and is of course absolutely impervious to moisture.—C. B. Rohland, *Dental Review.*

Thieves Disguise Teeth.—A Denver detective recently informed the public that thieves have learned to disguise their teeth by the use of gold caps slipped onto the teeth during the robbery, since so many of the "profession" have been traced through the description of the molars.

Treatment for Canker Sore Mouth.—I have found the full strength aromatic sulphuric acid almost a specific for this condition. I prescribe internally tincture of ferric chlorid gtt. v; potassium chlorate gr. iii; water ½ oz., every three hours in lemonade.—J. E. Power, *Cosmos.*

A Dam and Lubricant for Handpiece.—Keep a small jar of vaseline handy in which to dip the shanks of burs and mandrels before inserting them in the handpiece. It insures easy working of the handpiece and prevents ingress of moisture.—R. H. Manning, *British Dental Journal.*

Retaining Rotated Teeth.—In rotated teeth it is best to allow the appliance used to rotate to remain on at least three weeks; then retain with stationary retention. There is no better form of retainers than making bands for the teeth on each side of the one rotated and solder the three bands together.—J. N. McDowell, *American Journal.*

Fires.—W. E. and J. D. Allen, Selma, Ala., March 17; loss $2,500, practically covered by insurance.—N. D. Bray, Hartford, Conn., Feb. 24; total loss, insured for $1,000.—H. R. Highsmith, Fayetteville, N. C., March 25; loss $100.—A. T. Jarrett, Johnstown, Pa., March 28; nominal loss.—C. D. Brayton, Lake Mills, Wis., Feb. 17; partial loss.

Lenten.—A young lady on economy bent
Wished to give a luncheon in Lent,
So dried apples and water
She served, but it taught her
Swell affairs oft bring discontent.—*News.*

To Prevent Adhesion of Cement Under Bridges.—To avoid the danger of getting cement under the saddle of a bridge, cover all portions where it is not desired to have the cement stick, with gum acacia dissolved in water. If cement goes where it is not wanted the gum will dissolve from underneath and the cement will not stick.—Geo. W. Whitfield, *Dental Review.*

Sodium Aurate: A Non-irritating Local Antiseptic of Remarkable Power.—F. H. Verhoeff of Boston recognized the need of a local antiseptic combining effective germicidal power with lack of toxicity, experimented and found one which had these qualities. It is prepared by taking one gram of gold chlorid and cautiously adding sufficient of a 5 per cent aqueous solution of sod. hydrate to produce a faint alkaline reaction. When the solution becomes lighter in color and more turbid, add 100 c.c. of a 1 per cent sol. of boric acid and shake the mixture. The turbidity

disappears and the fluid becomes darker. Normal salt solution is added to make the total 200 c.c. Filter this and keep in a glass-stoppered bottle. By evaporating this to dryness, the antiseptic in powder is formed, and from this one may also make an ointment. Its bactericidal properties are dependent on the gold present. It must be completely neutralized to render it useful as an antiseptic. It is of great value in gonorrheal opthalmia. The bacteria killed are found colored with metallic gold.—*Jour. Am. Med. Assoc.*

SUPPORTING A SORE TOOTH WHILE DRILLING.—Instead of supporting a tooth by ligature to prevent pain while it is being drilled, take modeling compound, soften it and make a splint for both lingual and buccal sides of the teeth to support the sore tooth while drilling. This will prevent jarring and also prevent pressure on the inflamed peridental membrane.—T. L. GILMER, Chicago, *Dental Brief.*

PREPARING A MOLAR FOR A CROWN.—In preparing a molar for a crown, if there has been no decay at the mesial or distal surfaces the operation is very much simplified by cutting out these surfaces with a bur and making cavities. This removes a portion of enamel often very difficult to cleave, and the cavity thus made can be easily filled with amalgam, making a very strong base for the crown.—*Dental Review.*

BACKING TEETH.—To back teeth without producing strain on the pins and thus reduce to a minimum the danger of checking the facing, file a notch in each pin close to the backing on the side opposite to which you intend bending them. The notch should be deep so that the pin will bend easily. I have not had a facing check since adopting this method.—OLIVER MARTIN, Ottawa, Canada, *Review.*

IMMEDIATE ROOT FILLING A MISTAKE.—Most men who use cocain for the removal of pulps fill the canals at the same sitting. That is a mistake. I never do that unless it is absolutely necessary, and then only under the most favorable circumstances. It is just as necessary to fill root at a second sitting after the use of cocain as after the use of arsenic, and for the same reasons.—F. B. NOYES, *Dental Review.*

DAMAGE SUITS.—A woman in St. Louis, Mo., is suing a dentist for $15,000, alleging that blood poison set in after the extraction of a tooth, forcing her to have a surgical operation performed in which a bone of the jaw was removed. This has affected her speech and her ability to masticate her food.—A woman of Syracuse, N. Y., has sued a dentist of that city for $20,000 for extracting the wrong tooth.

A WATERTIGHT GOLD FILLING.—Prepare cavity as for an inlay and then give a retention form either by grooves or dovetails. Dry the cavity and line with thin cement. Cut a piece of No. 30 or No. 40 gold foil as though for taking an impression for an inlay and put it down in the cavity in the usual impression method. This gives a cavity lined with gold, with cement in every possible irregularity. Fill with any cohesive gold which the operator is in the habit of using, beginning first with the undercuts where the lining may be split, condensing thoroughly with hand pluggers and finishing in the usual way. The method is applicable to the tiniest

gold filling or the largest contour, and makes gold filling easy and sure.—W. THOMPSON MADIN, *British Dental Journal.*

STERILIZATION OF CUTTING INSTRUMENTS.—S. P. Barboza (*Chem. Med. Record,* August, 1905) recommends an alcoholature made by dissolving five parts of camphor-phenol in 95 per cent alcohol as the safest method of sterilizing cutting instruments. Immersion in this solution has the least effect in dulling the edge of cutting instruments, which would be ruined by the ordinary process of sterilization by boiling.—*British Dental Jnl.*

WHALES' TEETH.—In the Fiji Islands whales' teeth form the coinage. They are painted white and red, and the red are worth twenty times as much as the white. The natives carry their wealth in the shape of necklaces, the red and the white teeth forming a fine contrast to their dusky skin. A frequent and quaint sight in the Fiji Islands is that of a newly made wife presenting her husband with her dowry of whales' teeth.—*Brit. Jnl. D. Sc.*

WAX FOR CARVING IN CROWN AND BRIDGE WORK.—Take pink gutta-percha one sheet, and one sheet of paraffin and wax base plate. Melt the wax with dry heat and stir in the gutta percha; when thoroughly mixed, pour off and let cool. This is superior to modeling compound in crown, bridge and gold inlay work, as it carves smoothly without chipping or flaking, and if trimmed too much a shaving may be added with a warm spatula.—C. B. POWELL, *Brief.*

NEEDED HELP.—This is told of a Philadelphian whose mother-in-law was alarmingly ill. One night the physician shook his head and said impressively:

"She has got to go to a hot climate. Mind, I don't say to a warm place, but a hot one."

The son-in-law disappeared, but soon emerged from the cellar carrying an ax. Handing it to the doctor he exclaimed:

"Here, you do it! I can't!"—*Lippincott's.*

DIFFICULT ERUPTION OF THIRD MOLARS.—Prompt excision of the entire hood of gum tissue is called for. The resection of the gum should be so thorough as to completely expose the four sides of the tooth; the blood-letting itself is beneficial. Every possible means should now be used to aid in the rapid eruption of the tooth and the prevention of reinfection of the parts. In a large percentage of cases the tooth can be brought into proper alignment and occlusion, and under such circumstances there is no valid excuse for its extraction.—M. L. RHEIN, *International Dental Journal.*

TRIAL PINS.—These are nothing more nor less than the pins that come with loose-pin crowns, and that the operator has cut too short or trimmed too much for the case in hand. Ordinarily they are thrown into the scrap box and forgotten, or later—if they consist of or contain platinum—turned in "on account." A few of them, however, should be kept near by and used as guides for the crown during the act of fitting. An approximate fit of the pin in the root-canal is all that is needed; it enables one to determine the bearings of the crown on the faced part of the root even better

than the pin that it is designed to use as a fixture. When the crown has been approximated satisfactorily the pin that came with it is cut, trimmed and bent until it fits the root canal; it already fits the crown.—*Dent. Of. and Lab.*

Do Not Use Dioxide of Hydrogen in a Maxillary Sinus.—I have been asked whether I would use dioxide of hydrogen in a maxillary sinus. I would say most emphatically, no. In the first place, unless you have secured two large counter openings in the antrum, you will produce tremendous pressure by the liberation of the extra atom of oxygen and cause your patient a great deal of pain and suffering; consequently, I say, no, do not use it.—M. L. Rhein, *Pacific Dental Gazette.*

Hygienic Fillings.—The sealing of the tubuli is the one important feature in the preservation of tooth structure. We now have a material for this purpose that is better than cement; material that is ready for instant use, that requires no mixing, that sets instantly, that is non-conducting, adhesive and antiseptic, thus forming the ideal lining; it firmly anchors the first piece of gold, upon which the rest of the filling may be packed without danger of loosening or dislodgment. This material is Gold Anchor Intermediary, composed of thymol, dammar, baric sulphate and oil of cloves.—Alison R. Lawshe, *Items of Interest.*

Silver Nitrate with Cement Fillings.—A cement filling, oxyphosphate of zinc, placed upon a surface treated with nitrate of silver will, for some reason, last a great deal longer and be a great deal better mass than the same mass not having the peculiar effect it gets from this film of silver albuminate. A great many, no doubt, have seen the effect of nitrate of silver upon a surface which has been infected to a very slight depth. That in time will become a polished black surface and further decay will never result. Now, if in deeper cavities we can make partial preparation and apply nitrate of silver, and have it last longer than otherwise, it is worth knowing.

Facts About Eating.—John W. Achron finds that where there are present sick headaches, biliousness, hyperacidity, duodenal ulcer, spastic constipation, acne, pruritis, neuralgia, insomnia, chronic rheumatism, bronchitis, asthma, postnasal catarrh, eczema, cerebral hemorrhage, arteriosclerosis, Riggs' disease, frequent urination, "that tired feeling," obesity in some of its forms, and many other ailments and conditions, there is or has been overeating of some sort. He also finds that there is a history of too much eating of one kind of food, meals taken too near together, "nibbling" between meals, the food taken not being properly insalivated, or that it is being washed down by an excess of liquids taken with it or after meals independent of the foods ingested. The question is not one of individuals so much as the control in habits of eating and of restriction of food to the actual, systemic, physiological requirements. If diseases are to be cured, or unorganized exudates absorbed, the restriction must be carried to the point where the system lives for a time on the waste locked in its tissues, and carried in the blood. This is "cleaning house," and the food, like the

sail of a boat, must be trimmed flat enough to allow the body to weather the conditions present. Starches and sugars are the most likely to clog the system; and meats and other foods should be controlled.—*Am. Medicine.*

PTYALISM.—For tender, bleeding gums from any cause, associated with fetid breath:

℞	Formaldehyd (40 per cent sol)	ʒj
	Thymoli,	gr. x
	Tincturæ benzoini compositæ	ʒij
	Alcohol,	q.s.ad. ℥iij
		M.

Sig:—Teaspoonful in wineglass of water as a mouth wash every two or three hours.—*Medical News, Cosmos,* October, 1905.

COMPREHENSIVE.—The following is the copy of a sign exhibited over the door of a general store in a little out-of-the-way Cornish village, and reads: "R. G. ——, Surgin. Parish Clark, Groser and Undertaker, respectably informs ladys and gentlemen that he drors teeth without wateing a minut, apply leches every hour, blisters on the lowest terms, and visicks for a penny apiece. As times is crul bad I begs to say that I have beginned to sell all sorts of stastionary ware, cox, hens, fowls, pigs, and all other kind of powltry. I have also laid in a large assortment of trype, lollipops, ginger beer and matches, and other pikkels, such hepsom salts and winzer sope."—*Dominion Dent. Jour.*

ILLEGAL PRACTITIONERS.—Two men at Boston, Mass, were charged with practising dentistry without a license March 1.—April 3 a dentist and his assistant were each fined $50, the court holding the dentist guilty for employing an unlicensed dentist.—After three years of litigation a dentist of Kansas City, Mo., has been found guilty of practising dentistry illegally. While he held a certificate it is claimed that he obtained it by unfair means.—Feb. 23 a warrant was issued against a man in St. Louis for practising dentistry without a license.—March 16 a man of Brookiyn was fined $50 for practising dentistry without a license.—Feb. 23 a man of Toledo, O., was fined $10 and costs for practising dentistry without a license.

FATALITIES.—A woman of Bristol, Conn., bled to death as a result of the extraction of a tooth by her dentist.—A woman of Osage, Ia., died in a dental chair April 14 after chloroform had been administered.—A woman at Covington, Ky, while suffering intense pain from an aching tooth, inhaled the fumes of chloroform and died shortly after.—Cancer that was brought on by a defective tooth, following an operation, after which came an attack of pneumonia, caused the death of a man at Utica, Ind., Feb. 24, according to newspaper report.—A man at Albany, N. Y., died March 10 from blood poisoning as a result of an operation on an ulcerated tooth.—A woman at Watertown, N. Y., died March 16 in a dental chair while having an impression of the teeth taken. She had been troubled with heart disease for several years.—A farmer at Corsicana, Tex., died March 28 from lockjaw, resulting from an abscessed root.—March 13 a man at Tex-

arkana, Tex, died from blood poisoning as a result of a dental operation performed a few days before

ROBBERIES.—J. G. Abernathy, Ardmore, I. T, April 3; $190 worth of gold.—Dr. Terry, $40; Dr. Tanner, $25; Dr. Comegys, $25; Dr. Wallick, $50; all of Shreveport, La., March 13.—George E. Dow, Portland, Me., March 28; $400 worth of teeth.—Guy N Gammon, Lynn, Mass., March 19; $13.—G. R. Gordon, Lansing, Mich., March 21; $40 worth of gold leaf.—C. C. Clark, Sedalia, Mo., Feb. 25; $25 worth of instruments.—J. W. Watson, St Louis, Mo., Feb. 23; $40 worth of instruments.—R. O. Hirschi, Guthrie, Okla., April 6; $30.—T. W. Morgan, Sharon, Pa., March 7; $250 in tools and gold fillings.—Drs. Scholl, Reading, Pa., March 7; nominal loss.—E. O. Seiffert, McKeesport, Pa., March 2; $75 worth of gold.—R E. Bullington, Memphis, Tenn., Feb. 28; $75.

ORAL SEPSIS AS A CAUSE OF IRITIS.—Campbell urges that the constitutional treatment of iritis should be directed to the removal of oral sepsis, for although about 50 per cent of cases of iritis are undoubtedly due to syphilis, there is even here the possibility of a mixed infection. He has seen three cases of iritis in which there was an absolutely negative history of either syphilis or rheumatism in any shape or form, but in all three there was marked evidence of oral sepsis. The teeth were scaled, filled or extracted, suppurating pockets were purified and the mouth was rendered as pure as possible. This, combined with the use of mydriatics and tonics, cured all three patients rapidly.—*Jour. Amer. Med. Asso.*

THE PILL AND THE BILL.—

An angel's face the doctor wears
When first his aid is sought;
A God-like countenance he bears
Soon as the cure is wrought.

But when his little bill he makes
And seeks his humble fee,
A form most terrible he takes,
A horrid devil he.

—PROF. J. STUART NAIRNE, Glasgow, Scotland.

BEWARE OF EFFERVESCENT MEDICINES.—I want to add one word of caution in the use of some of the medicines, or one in particular, which Dr. Rhein has suggested. I am becoming more and more opposed to the use of medicaments in pulp-canal treatment which cause effervescence. Potassium and sodium solutions, mentioned by Dr. Rhein, in his hands, used as he has advocated, will do no injury whatever. The dioxygen will do no injury whatever if used as he uses it. But there is this danger in the use of all these drugs which cause effervescence, that down deep in the canal, in the apical part of the canal, we may have some putrescent material, and if we apply to that canal any of those effervescent materials we are likely to carry the infected mass over the apical foramen and start up an inflammation that would never have otherwise occurred. I have known peroxid of

hydrogen in cases of that kind to cause abscesses far into the tissue which otherwise never would have occurred.—C. N. JOHNSON, *Pacific Gazette.*

MILK OF MAGNESIA IN PYORRHŒA CASES.—As an example of simple, continued medication in pyorrhœa cases, we have the employment of so-called milk of magnesia, which is theoretically, and probably in reality, an antacid of considerable value. Let us suppose that occasion calls for a continued antacid effect within a pyorrhea pocket, and suppose that a paste of magnesium hydrate, the sediment of milk of magnesia, were available, which could be readily introduced to the extreme depth of this pyorrhea pocket. Is it not reasonable to believe that some of this paste would remain in position for several days and an antacid state be maintained until the last trace has been removed by chemical action or otherwise?—W. V.-B. AMES, *Dental Review.*

METAL FOR MATRICES.—When I first began the burnishing of platinum matrices I tried to make the metal just as thin as possible. I would roll the metal out as thin as I could, fold it and roll it through the mill again, and then fold it so that four thicknesses were rolled through. I do not do so now, for the reason that I do not get enough cement between the inlay and the cavity wall. I believe you must have a certain amount of cement between the cavity wall and the inlay to get the best results, and when the platinum is thinned down beyond a certain point something is lost in the strength and adhesion of the cement to the cavity wall. The main thing is accuracy and simplicity. We want to lose all the machinery we can about dentistry; the simpler we get everything the better can we do—the better men do we become.—G. W. SCHWARTZ, Chicago, *Dental Cosmos.*

MARRIAGES.—W. E. Ervin, a dentist of Chicago, was married to Miss Maud E. Davidson of Aledo, Ill., Feb. 28.—George Freeman, a dentist of Britton, S. D., was married to Miss Maude Herrick of Burch, S. D., Feb. 28.—E. L. Friel, a dentist of Camden, Ind., was married to Miss Bertha McGinnis of Indianapolis, Feb. 24.—M. R. Kinner, a dentist of Sunnyside, Wash., was married to Miss Emma Sigler of Sunnyside, March 16.—O. P. Olson, a dentist of Mellette, S. D., was married to Miss Laura Horning of Mellette, Feb. 23.—Roy R. Sparks, a dentist of Philadelphia, was married to Miss Johanna Zoll of Philadelphia, March 15.—M. A. Schutt, a dentist of Michigan City, Ind., was married to Mrs. Mattie Corbett of Milwaukee, Wis., Feb. 17.—John N. Wigginton, a dentist of Milwaukee, Wis., was married to Miss Florence Kerr of Milwaukee, April 18.—W. F. R. Whorton, a dentist of Huron, S. D., was married to Miss Verna Kalb of Winona, Minn., March 14.

COLOR FOR PORCELAIN INLAYS.—A difference in the character of the high fusing and the low fusing porcelains is a factor. The high fusing porcelain is a more translucent body than the low fusing. This makes it more desirable for teeth whose translucence is marked. As a general rule the low fusing porcelain is more desirable for labial cavities where the greater denseness is accompanied by a more decided opaqueness. Aside from this

difference in porcelains two other features should be noted. First, we will gain much by using as large a body of porcelain as possible. Second, by using a white cement we will have a less number of light rays absorbed than is possible by the use of any colored cement, and if we adhere strictly to a cement of one color we shall become more expert in the use of our porcelains through always obtaining the same results. If these two points are carefully observed, I believe the operator will be materially aided in the production of an inlay of good color.—C. H. FARRAND, *La Crosse, Wis.*

IODO-GLYCEROL IN PYORRHŒA ALVEOLARIS.—If the disease be due to local causes, the removal of the cause and local treatment will generally be all that is necessary. The removal of deposits and the application of iodo-glycerol every other day with vigorous gum-massage will soon reduce and restore the gum and alveolar process to a healthy condition.

The formula for iodo-glycerol is:

Zinc iodid,	15 gm.
Water,	10 "
Iodin,	25 "
Glycerin,	50 "

Loose teeth should be fastened to solid teeth to preserve them as long as possible and to prevent movement from extending the inflammatory process to adjoining teeth.—E. S. TALBOT, *Dental Cosmos.*

REASONS FOR THE INSERTION OF PLASTIC FILLING IN DECIDUOUS TEETH OR IN THOSE WHICH DECAY RAPIDLY.—The reasons for inserting a plastic filling in young teeth or those decaying rapidly are not because these teeth are soft and may later become hard, or that they are not sufficiently dense to bear metallic fillings. Plastic filling and inlays, which come into this class are used in young teeth because—

1. They cause the young or debilitated less stress in insertion.
2. They are relatively non-conductors of thermal changes.
3. They cause less irritability to the perdental membrane during insertion.
4. The pulp in young teeth is so large that in many cases its life would be endangered by a metal filling.
5. Greater portions of enamel may be left for esthetic reasons.—A. E. WEBSTER, *Dominion Dental Journal.*

REFLEX NEUROSES OF DENTAL ORIGIN.—W. J. Lederer, in American Medicine, calls attention to the fact that often reflex neuroses have their origin in diseased conditions of the teeth.

Dental conditions, such as are liable to act as causative factors of neuralgia, are numerous; they may be classified as:

1. Conditions in which the dental organs causing the malady indicate a pathologic or abnormal condition, as: Acute or chronic pulpitis; chronic pericementitis (dental periostitis); exposed dentin; caries; abnormal position of teeth (overcrowding); foreign bodies in the pulp cavity; pyorrhea

alveolaris (Riggs' disease); foreign bodies in the gums or alveoli; injuries produced by extraction; atrophy of the gums.

2. Those conditions in which the dental organs causing the malady do not indicate a pathologic condition, as: Exostosis; impacted teeth; pulp stones.

3. Then we have "neuralgia of the edentulous."

Just as the causes of dental reflex neuroses vary, so unlike are the resulting affections of dental irritation. These can be divided into:

1. Conditions producing disturbances of the peripheral organs, namely: (a) The eyes, (b) the ears, (c) those producing muscular disturbances, (d) those producing visceral disturbances, (e) those bringing about trophic and vasomotor changes.

2. Conditions producing disturbances of certain nerves and nerve centers, namely: (a) Facial and other neuralgias, (b) those producing pareses and paralyses, (c) those producing tetanus.

3. Conditions affecting the cerebral centers, namely: (a) Headache, (b) hysteria, (c) epilepsy, (d) chorea, (e) insanity.—*Med. Standard.*

DANGERS OF COCAIN.—The cocain habit is the most dangerous and hopeless of all the drug habits. It is increasing to an alarming extent, and timely measures to check the abuse of cocain should be taken by doctors before the evil becomes uncontrollable.

Do not give prescriptions for cocain. Wherever it seems necessary to employ the drug in ointments, suppositories, snuffs or sprays, have them prepared yourself, so the patient cannot know what he is using, and so you can discontinue its use when you see fit.

Laws cannot stop the cocain habit. If people know about the drug and want it, they will get it somehow. The doctor is the only man who can interpose successfully between them. If he feels his responsibility in the matter, and discharges his duty to his patients, he can stop the abuse of this drug.

The effects of cocain, while delightfuly exhilarating, are so evanescent, the individual soon passes all bounds in its use. Mental and physical ruin, if not actual death, are certain results if the habit is continued.

There are specialists who employ cocain sprays freely, and almost as a routine measure to clear the nose, and subdue irritation in the throat while at work in these cavities. Many patients frequent their offices just for the relief, stimulation and temporary enjoyment which the spray affords. We do not suppose that the spray is employed to attract and hold patients. Nevertheless, that is the effect of the practice.

Doctors should not employ cocain at all except where it is absolutely necessary. Its use should be practically restricted to the production of local anesthesia. Where its use must be entrusted to the patient, surround it by every possible safeguard. Do not let him know what it is. Only give him a small quantity, already prepared, and stop it as soon as possible.—*Med. Brief.*